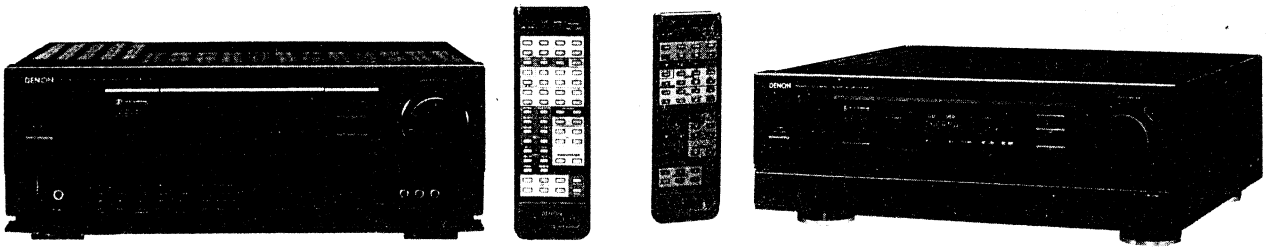
DENON

Hi-Fi AV Surround Amplifier

MODEL AVC-3020 2020/2020G

AV SURROUND AMPLIFIER



AVC-3020

AVC-2020

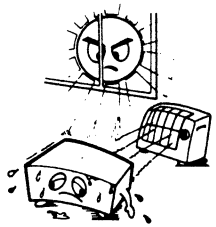
NIPPON COLUMBIA CO., LTD.

SPECIFICATIONS

	AVC-3020 For U.S.A. and Canada Models	AVC-2020/2020G For Multi Voltage Model
• **Audio Section**		
(Power amplifier)		
Rated output:	80 W + 80 W (20 Hz to 20 kHz 8 ohms 0.08% T.H.D.) (Main in – speakers out; 2-channel stereo mode)	80 W + 80 W (20 Hz to 20 kHz 6 ohms 0.08% T.H.D.) (Main in – speakers out; 2-channel stereo mode) Main: 100 W + 100 W (6 ohms EIAJ) Center: 50 W + 50 W (6 ohms EIAJ)
	Center: 35 W + 35 W (20 Hz to 20 kHz, 8 ohms 0.4% T.H.D.)	
	Rear: 35 W + 35 W (1 kHz 8 ohms 2.0% T.H.D.)	Rear: 50 W + 50 W (6 ohms EIAJ)
	(CD input – each speaker output; Dolby Pro-logic surround)	
Frequency response:	5 Hz to 50 kHz (Main in – speaker out)	
Rated input level / impedance:	1 V/10 k ohms (Main in – speaker out)	
Signal-to-noise ratio:	115 dB (Main in – speaker out)	
Output terminals:	Main: A or B 6 to 16 ohms A + B 12 to 16 ohms Center: 6 to 16 ohms Rear: 6 to 16 ohms	
(Pre-amplifier)		
Line input (Each line input – FRONT PRE OUT)		
Input sensitivity / impedance:	150 mV/30 k ohms	
Frequency response:	10 Hz to 50 kHz: +0, –3 dB 5 Hz to 100 kHz: +0, –3 dB (VDP DIRECT)	
Tone control range:	BASS: 100 Hz ±10 dB TREBLE: 10 kHz ±10 dB	
Signal-to-noise ratio (FRONT PRE OUT):	92 dB 95 dB (VDP DIRECT)	
Distortion factor:	0.01% 1 kHz 3 V (BYPASS mode)	
Rated output / Maximum output:	1 V/8 V (common for FRONT, CENTER, REAR, MONO, each PRE OUT)	
Maximum headphone output:	284 mW (8 ohms)	
Phono equalizer (PHONO input – REC OUT)		
RIAA deviation:	20 Hz to 20 kHz ±1 dB	
Signal-to-noise ratio:	76 dB (JIS-A, with 5 mV input)	
Rated output / Maximum output:	150 mV/8 V	
Distortion factor:	0.03% (1 kHz, 3 V)	
• **Video Section**		
Standard video jacks		
Input and output level / impedance:	1 Vp-p/75 ohms	
Frequency response:	1 Hz to 10 MHz +0, –3 dB DC to 20 MHz +0, –1 dB (VDP – DIRECT)	
S-video output jacks		
Input and output level / impedance:	Y (brightness) signal: 1 Vp-p/75 ohms C (color) signal: 0.286 Vp-p/75 ohms	
Frequency response:	1 Hz to 11 MHz +0, –3 dB DC to 20 MHz +0, –1 dB (VDP – DIRECT)	
• **General**		
Power supply:	120 V AC, 60 Hz (for U.S.A. and Canada models) 110/220 V AC, 50/60 Hz (for multi-voltage model)	
Power consumption:	6.0 A (for U.S.A. and Canada models) 250 W (for multi-voltage model)	
Maximum external dimensions:	434 (W) × 160 (H) × 427 (D) mm (17-3/32" × 6-19/64" × 16-13/16") (AVC-3020/2020) 470 (W) × 160 (H) × 427 (D) mm (18-1/2" × 6-19/64" × 16-13/16") (AVC-2020G)	
Weight:	15 kg (33 lbs 2 oz) (AVC-3020/2020) 16.2 kg (35 lbs 2 oz) (AVC-2020G)	
• **Remote control unit (RC-134)**		
System remote control with learning function		
	Total buttons: 60 DENON system code DAT: 8 buttons CD player: 8 buttons Cassette deck: 8 buttons Tuner: 2 buttons AVC-3020/2020 fixed codes: 54 buttons Learning buttons System call buttons: 5 (maximum of 15 codes per button) Program – Audio: 54 buttons – Video: 54 buttons Maximum total: 108 buttons	
	Batteries: R6P (AA Type (four batteries)	
	External dimensions: 70 (W) × 215 (H) × 35 (D) mm (2-3/4" × 8-15/32" × 1-3/8") Weight: 230 g (Approx. 8 oz) (including batteries)	

* For purposes of improvement, specifications and design are subject to change without notice.

NOTE ON USE

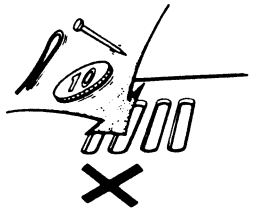


Be careful of high temperatures

- Do not place the set in a location where it will be exposed to direct sunlight or near a heating appliance.

Caution on rack/cabinet installation

- Avoid installing the set in a closed-type rack.
- When installing in a rack or cabinet, provide a sufficiently large ventilation opening to promote heat radiation.



Do not allow foreign matter into the equipment

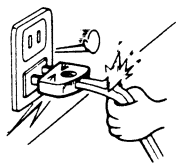
- Be especially careful of needles, hair pins, and coins getting into the set.

Caution on humidity, water, and dust

- Do not place the set in a location where there is high humidity or a lot of dust.
  Flower vases or other items containing water should not be placed on top of the set.

Care of the case

- Avoid the use of pesticides near the set as well as wiping the case with benzine, thinner or other solvents since they may cause a change in quality or color. Use a soft cloth when wiping away dirt and follow the instructions carefully when using chemically treated cloths.

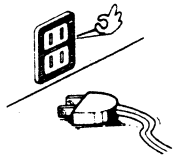


Care with the power cord

- When removing the plug from the receptacle, do not pull the power cord; be sure to hold the plug when removing it.

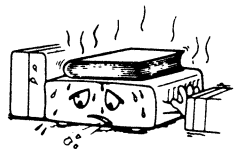
Do not open the case

- Opening the top cover or the bottom plate of the case and inserting your hand is dangerous. Do not open the case.
  If some trouble arises with the performance of the set, remove the power plug soon and contact the store where the set was purchased or a nearby dealer.



During your absence

- When not using the set for an extended period such as when taking a trip, be sure to disconnect the plug from the receptacle.



For sets with ventilation holes

Do not block the ventilation holes of the set

- Blocking of the ventilation holes will lead to damage of the set.
- The ventilation holes are very important for heat radiation from within the set. Care must be taken since placing an object against the holes will result in an extreme rise of temperature within the set.

CAUTION

RISK OF ELECTRIC SHOCK

DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION	ATTENTION
TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.	POUR PREVENIR LES CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

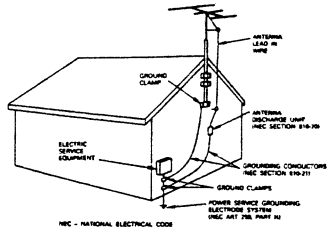
IMPORTANT SAFEGUARDS

1. Read Instructions – All the safety and operating instructions should be read before the appliance is operated.
2. Retain Instructions – The safety and operating instructions should be retained for future reference.
3. Heed Warnings – All warnings on the appliance and in the operating instructions should be adhered to.
4. Follow Instructions – All operating and use instructions should be followed.
5. Cleaning – Unplug this video product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
6. Attachments – Do not use attachments not recommended by the video product manufacturer as they may cause hazards.
7. Water and Moisture – Do not use this video product near water – for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, and the like.
8. Accessories – Do not place this video product on an unstable cart, stand, tripod, bracket, or table. The video product may fall, causing serious injury to a child or adult, and serious damage to the appliance. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the video product. Any mounting of the appliance should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.

8A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

9. Ventilation – Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the video product and to protect it from overheating, and these openings must not be blocked or covered. The openings should never be blocked by placing the video product on a bed, sofa, rug or other similar surface. This video product should never be placed near or over a radiator or heat register. This video product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhere to.
10. Power Sources – This video product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. For video products intended to operate from battery power, or other sources, refer to the operating instructions.
11. Grounding or Polarization – This video product is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.
12. Power-Cord Protection – Power-Supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

FIGURE A
EXAMPLE OF ANTENNA GROUNDING AS PER NATIONAL ELECTRICAL CODE


ANTENNA LEAD IN WIRE
GROUND CLAMP
ANTENNA DISCHARGE UNIT (NEC SECTION 810-20)
ELECTRIC SERVICE EQUIPMENT
GROUNDING CONDUCTORS (NEC SECTION 810-21)
GROUND CLAMPS
POWER SERVICE GROUNDING ELECTRODE SYSTEM (NEC ART 250, PART H)
NEC – NATIONAL ELECTRICAL CODE

13. Protective Attachment Plug – The appliance is equipped with an attachment plug having overload protection. This is a safety feature. See Instruction Manual for replacement or resetting of protective device. If replacement of the plug is required, be sure the service technician has used a replacement plug specified by the manufacturer that has the same overload protection as the original plug.
14. Outdoor Antenna Grounding – If an outside antenna or cable system is connectedto the video product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70–1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure A.
15. Lightning – For added protection for this video product receiver during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the video product due to lightning and power-line surges.
16. Power Lines – An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.
17. Overloading – Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.
18. Object and Liquid Entry – Never push objects of any kind into this video product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind of the video product.
19. Servicing – Do not attempt to service this video product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
20. Damage Requiring Service – Unplug this video product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
    a. When the power-supply cord or plug is damaged.
    b. If liquid has been spilled, or objects have fallen into the video product.
    c. If the video product has been exposed to rain or water.
    d. If the video product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the video product to its normal operation.
    e. If the video product has been dropped or the cabinet has been damaged.
    f. When the video product exhibits a distinct change in performance – this indicates a need for service.
21. Replacement Parts – When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.
22. Safety Check – Upon completion of any service or repairs to this video product, ask the service technician to perform safety checks to determine that the video product is in proper operating condition.

- **We greatly appreciate your purchase.**
- **Read these operating instructions carefully to obtain the best performance and a long, trouble-free life from this amplifier. Be sure to keep these operating instructions for future reference.**

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Check that the following items are included in the package in addition to the main unit:

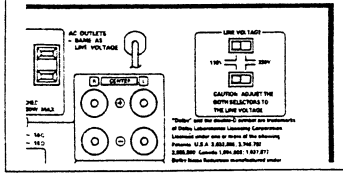
①Operating Instructions 1
②Warranty 1
③Remote control unit (RC-134) 1
④R6P/AA batteries 4
⑤Indication plate 1

1 BEFORE USING

Read the following cautions carefully before using the amplifier:

- Moving the set
  Be sure to unplug the power cord and disconnect other cords connecting the amplifier to other audio units before moving the amplifier to prevent damaging or short-circuiting the cords.
- Before turning on the power switch
  Check again to make sure that all connections are correct and that there are no problems with the connection cords. Be sure to turn the power STANDBY before disconnecting or connecting cords.
- Retain the operating instructions
  After reading this manual, store it in a safe place.
- The illustrations used in this manual may differ somewhat from the actual amplifier.

- **MULTI-VOLTAGE MODEL ONLY**



Setting the line voltage

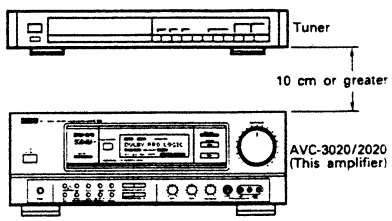
- The customer can set the VOLTAGE SELECTORS on the back panel for appropriate line voltage.
- Do not use excessive force in setting the VOLTAGE SELECTOR KNOB – you may damage it.
- If the VOLTAGE SELECTOR KNOB does not slide smoothly, call qualified service personnel.
- Be sure to set both voltage selectors to same position.

2 INSTALLATION PRECAUTIONS

Using this amplifier or other electronic equipment containing microprocessors simultaneously with a tuner or TV may result in noise in the sound or picture.
If this should happen, take the following steps:

- Install the amplifier as far as possible from the tuner or TV set.
- Keep the antenna lines of the tuner or TV as far as possible from the amplifier's power cord and connection cables.
- This problem is especially frequent when using indoor antennas or 300 ohm feeder lines. We recommend using outdoor antennas and 75 ohm coaxial cables.

A note on stacking



For cooling purposes, do not place another AV component directly on top of the amplifier. Be sure to leave a space of at least 10 cm.

3 HANDLING PRECAUTIONS

- **Switching the input function when the input jacks are unconnected**
  Switching the input function when a component is not connected to the input jacks may result in the generation of click noise. If this should happen, turn down the MASTER VOLUME or connect a component to the input jacks.

- **Playback with Dolby Pro-logic**
  The Dolby Pro-logic position provides optimum effectiveness for sources recorded with Dolby surround. A different surround mode should be selected when playing back sources other than this type. Note in particular that when playing back monaural recording sources, the bypass mode or the simulated mode should be used. Other modes will not provide a suitable effect.

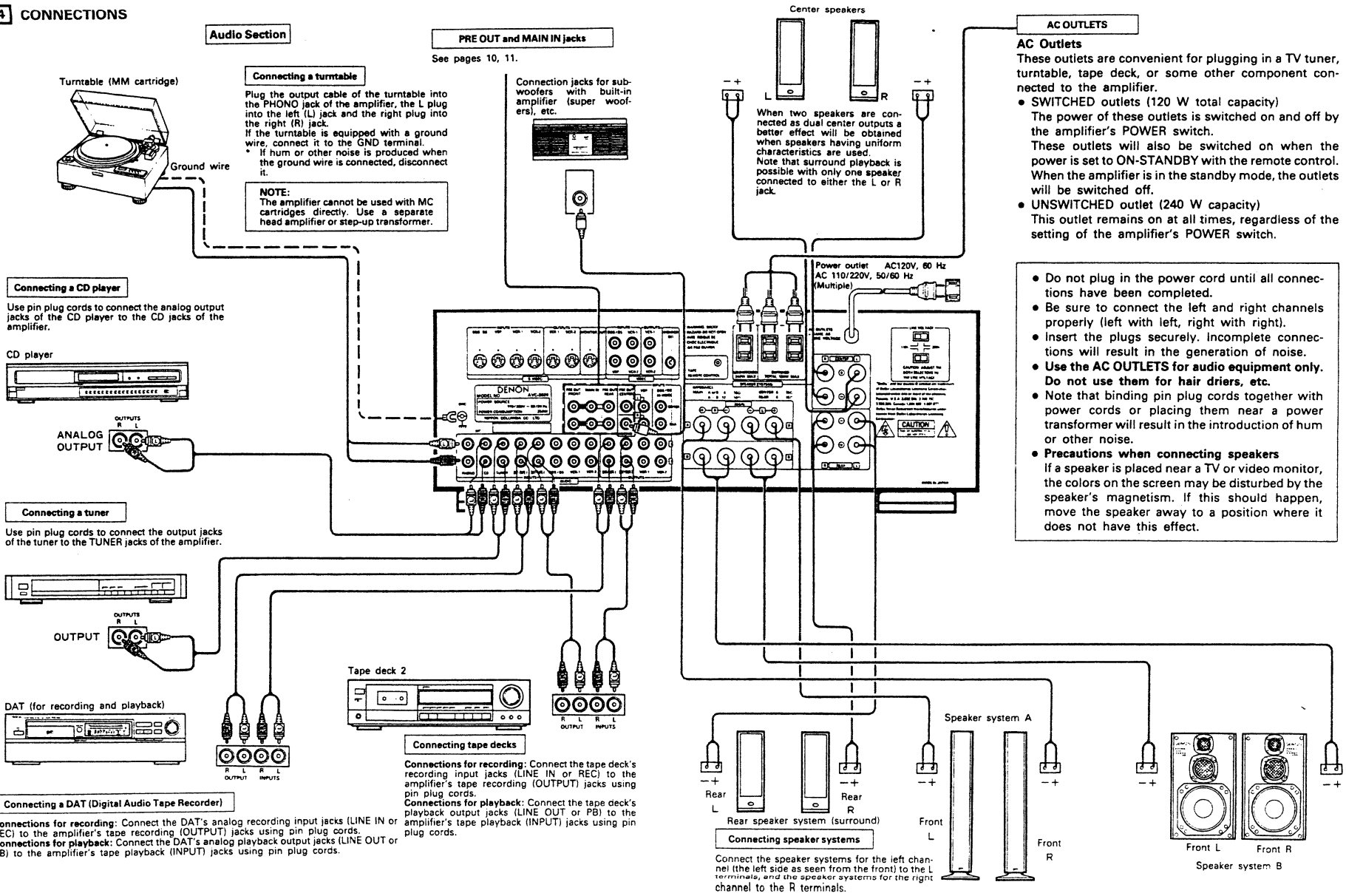
- **Muting of the PRE OUT jacks**
  An electronic muting circuit has been connected to the PRE OUT jacks. This circuit greatly attenuates the output signal for approximately 8 seconds after the power has been switched on. Raising the volume during this operation will result in an extremely large output once the muting has ended, so volume adjustments should be made only after the completion of muting.

- **Rear output level while in the surround mode**
  The rear level will seem small for sources other than Dolby stereo sources. The reason for this is that a rear playback signal is not contained in the software. When playing back such software with a surround function, the mode should be set to something other than Dolby Pro-logic surround. The rear output level may seem small for software having a small rear signal, even Dolby stereo sources.

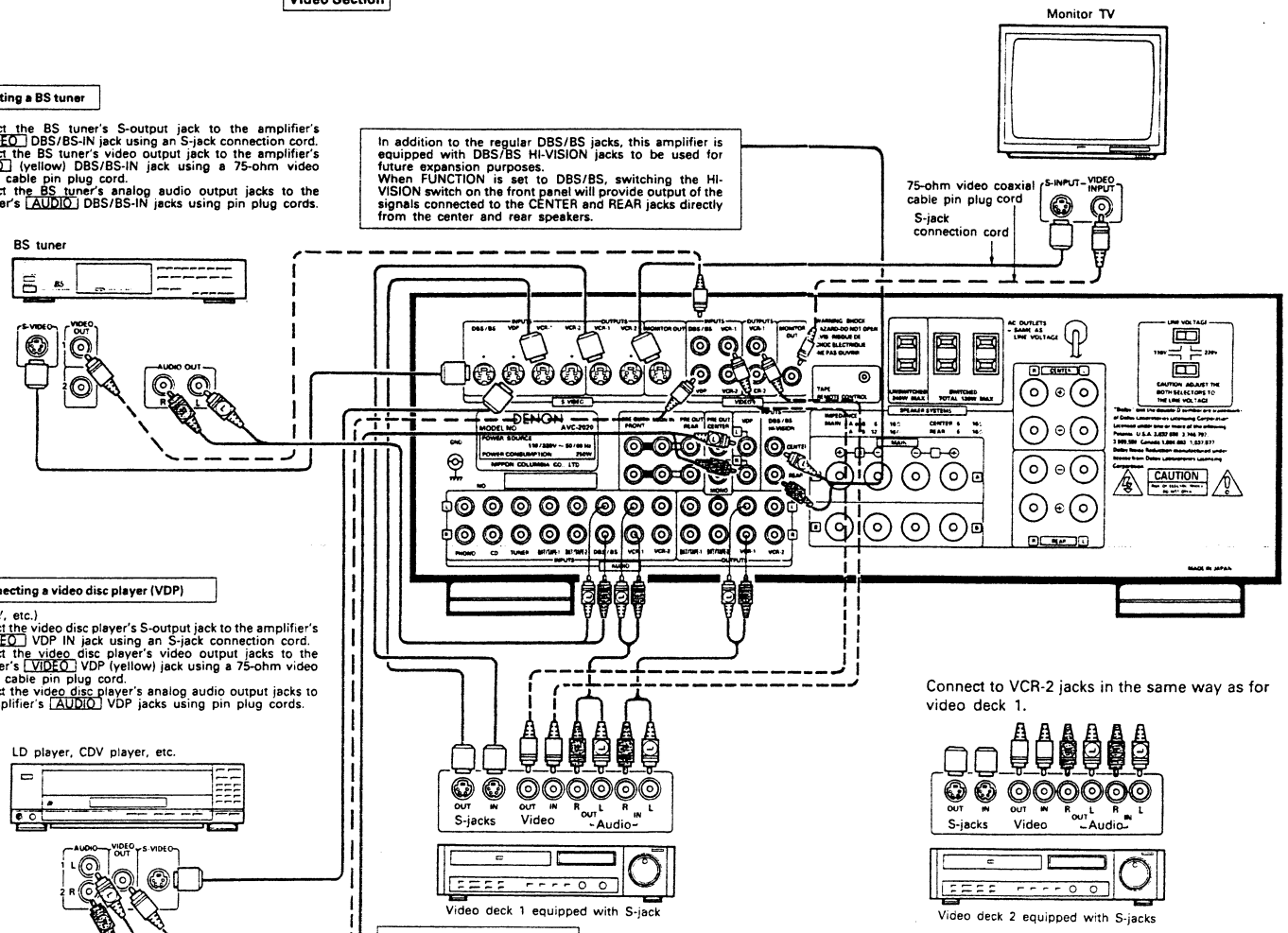
- **Opening and closing the door**
  This amplifier is equipped with a door on the front panel. Press the "PUSH OPEN△" portion printed at the upper right edge of the door to release and open the door. Likewise, to close the door, press in the same manner until a click sound is heard.

NOTE:
The door will open naturally once it has been released, but it may stop before fully opening. This is not a fault; just lightly push the door open.

4 CONNECTIONS


Audio Section
PRE OUT and MAIN IN jacks
See pages 10, 11.
Turntable (MM cartridge)
Ground wire
Connecting a turntable
Plug the output cable of the turntable into the PHONO jack of the amplifier, the L plug into the left (L) jack and the right plug into the right (R) jack.
If the turntable is equipped with a ground wire, connect it to the GND terminal.
* If hum or other noise is produced when the ground wire is connected, disconnect it.
NOTE:
The amplifier cannot be used with MC cartridges directly. Use a separate head amplifier or step-up transformer.
Connection jacks for sub-woofers with built-in amplifier (super woofers), etc.
Center speakers
When two speakers are connected as dual center outputs a better effect will be obtained when speakers having uniform characteristics are used.
Note that surround playback is possible with only one speaker connected to either the L or R jack.
AC OUTLETS
AC Outlets
These outlets are convenient for plugging in a TV tuner, turntable, tape deck, or some other component connected to the amplifier.
• SWITCHED outlets (120 W total capacity)
The power of these outlets is switched on and off by the amplifier's POWER switch.
These outlets will also be switched on when the power is set to ON-STANDBY with the remote control. When the amplifier is in the standby mode, the outlets will be switched off.
• UNSWITCHED outlet (240 W capacity)
This outlet remains on at all times, regardless of the setting of the amplifier's POWER switch.
Power outlet AC120V, 60 Hz
AC 110/220V, 50/60 Hz
(Multiple)
• Do not plug in the power cord until all connections have been completed.
• Be sure to connect the left and right channels properly (left with left, right with right).
• Insert the plugs securely. Incomplete connections will result in the generation of noise.
• Use the AC OUTLETS for audio equipment only. Do not use them for hair driers, etc.
• Note that binding pin plug cords together with power cords or placing them near a power transformer will result in the introduction of hum or other noise.
• Precautions when connecting speakers
If a speaker is placed near a TV or video monitor, the colors on the screen may be disturbed by the speaker's magnetism. If this should happen, move the speaker away to a position where it does not have this effect.
Connecting a CD player
Use pin plug cords to connect the analog output jacks of the CD player to the CD jacks of the amplifier.
CD player
ANALOG OUTPUT
Connecting a tuner
Use pin plug cords to connect the output jacks of the tuner to the TUNER jacks of the amplifier.
OUTPUT
DAT (for recording and playback)
Tape deck 2
Connecting a DAT (Digital Audio Tape Recorder)
Connections for recording: Connect the DAT's analog recording input jacks (LINE IN or REC) to the amplifier's tape recording (OUTPUT) jacks using pin plug cords.
Connections for playback: Connect the DAT's analog playback output jacks (LINE OUT or PB) to the amplifier's tape playback (INPUT) jacks using pin plug cords.
Connecting tape decks
Connections for recording: Connect the tape deck's recording input jacks (LINE IN or REC) to the amplifier's tape recording (OUTPUT) jacks using pin plug cords.
Connections for playback: Connect the tape deck's playback output jacks (LINE OUT or PB) to the amplifier's tape playback (INPUT) jacks using pin plug cords.
Rear L
Rear R
Rear speaker system (surround)
Speaker system A
Front L
Front R
Front L
Front R
Speaker system B
Connecting speaker systems
Connect the speaker systems for the left channel (the left side as seen from the front) to the L terminals, and the speaker systems for the right channel to the R terminals.

Video Section



Connecting a BS tuner

- Connect the BS tuner's S-output jack to the amplifier's S-VIDEO DBS/BS-IN jack using an S-jack connection cord.
- Connect the BS tuner's video output jack to the amplifier's VIDEO (yellow) DBS/BS-IN jack using a 75-ohm video coaxial cable pin plug cord.
- Connect the BS tuner's analog audio output jacks to the amplifier's AUDIO DBS/BS-IN jacks using pin plug cords.

In addition to the regular DBS/BS jacks, this amplifier is equipped with DBS/BS HI-VISION jacks to be used for future expansion purposes.
When FUNCTION is set to DBS/BS, switching the HI-VISION switch on the front panel will provide output of the signals connected to the CENTER and REAR jacks directly from the center and rear speakers.

Connecting a monitor TV

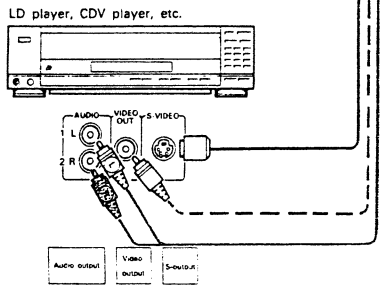
- Connect the TV's S-video input jack to the amplifier's S-VIDEO MONITOR OUT jack using an S-jack connection cord.
- Connect the TV's video input jack to the amplifier's VIDEO MONITOR OUT jack using a 75-ohm video coaxial cable pin plug cord.

Connecting a video disc player (VDP)

(VDP, CDV, etc.)

- Connect the video disc player's S-output jack to the amplifier's S-VIDEO VDP IN jack using an S-jack connection cord.
- Connect the video disc player's video output jacks to the amplifier's VIDEO VDP (yellow) jack using a 75-ohm video coaxial cable pin plug cord.
- Connect the video disc player's analog audio output jacks to the amplifier's AUDIO VDP jacks using pin plug cords.

LD player, CDV player, etc.



The AVC-3020/2020 is equipped with VIDEO AUX jacks on *the front panel for playback of video equipment. This* as other equipment to be connected.
The connection method is the same as that for the VDP.

Connecting a video deck (VCR)

- There are two sets of VCR jacks, allowing connection of two video decks for simultaneous recording and video copying.

Connections for video input and output:
Connect the video deck's video output jack to the amplifier's VIDEO (yellow) VCR-1 IN jack and the video deck's video input jack to the amplifier's VIDEO (yellow) VCR-1 OUT jack using 75-ohm video coaxial cable pin plug cords.

Video deck 1 equipped with S-jack

Connect to VCR-2 jacks in the same way as for video deck 1.

Video deck 2 equipped with S-jacks

Connecting the S-jacks
Connect the video deck's S-output jack to the amplifier's S-VIDEO IN jack and the video deck's S-input jack to the amplifier's S-VIDEO OUT jack using S-jack connection cords.

Connecting the audio input and output jacks

- Connect the video deck's audio output jacks to the amplifier's AUDIO VCR-1 IN jacks and the video deck's audio input jacks to the amplifier's AUDIO VCR-1 OUT jacks using pin plug cords.
- A second video deck may be connected to the VCR-2 jacks in the same way.

A note on the jacks

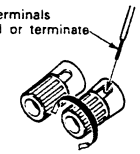
- The input selector for the S inputs and that for the pin jack inputs work in conjunction with each other.
- Superimposed displays use only special pin jack signal circuits and will not be displayed to S-jack monitor outputs.
- **Precaution when using S-jacks**
  This amplifier's S-jacks (input and output) and pin jacks (input and output) have independent circuit structures, so that signals input from the S-jacks are only output from the S-jack outputs and signals input from the pin jacks are only output from the pin jack outputs.
  When connecting the amplifier with equipment that is equipped with S-jacks, keep the above point in mind and make connections according to the equipment instruction manuals.

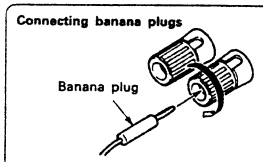
Speaker System Connections

- This amplifier can accommodate connections of a total of eight speakers including two sets of (front) main amplifier speakers (A and B), one set of rear speakers, and one or two center speakers.
- Connect the speaker terminals with the speakers making sure that like polarities are matched (⊕ with ⊖, ⊖ with ⊕). Mismatching of polarities will result in weak central sound, unclear orientation of the various instruments, and the sense of direction of the stereo being impaired.
- When making connections, take care that none of the individual conductors of the speaker cord come in contact with adjacent terminals, with other speaker cord conductors, or with the rear panel.

- **Speaker Impedance**
  - When speaker systems A and B are used separately, speakers with an impedance of from 6 to 16 ohms can be connected.
  - Be careful when using two pairs of front speakers (A + B) at the same time, since use of speakers with an impedance outside the range of 12 to 16 ohms will lead to damage.
  - Speakers with an impedance of 6 to 12 ohms can be connected for use as center and rear speakers.
  - The protection circuit may operate or damage may occur when speakers with an impedance outside of the above range are used.

①Peel off the insulation from the tip of the cord.
②Twist the conductors.
③Turn the speaker terminal counterclockwise to loosen it.
④Insert the exposed portion of wire completely and turn the terminal clockwise to tighten it.





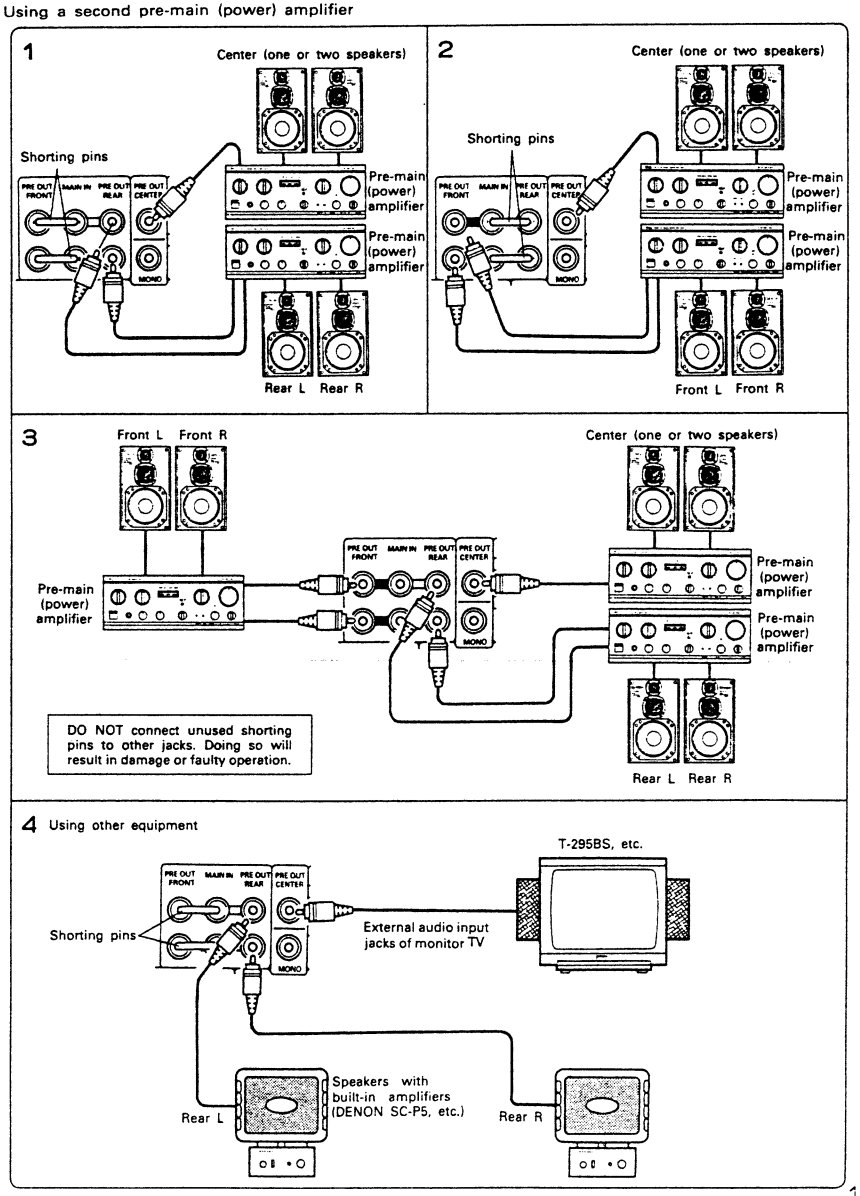
Speaker connections using the PRE OUT and MAIN IN jacks

These jacks are used when a separate pre-main (power) amplifier is used to amplify the front, rear, and center sounds.

Table of outputs when using the PRE OUT jacks

Diagram number	Jack output / Insertion of shorting pin	MAIN		REAR		CENTER	
		SP-A SP-B	PRE OUT	SPEAKER	PRE OUT	SPEAKER	PRE OUT
1	FRONT PRE OUT-MAIN IN	FRONT	×	REAR	REAR	CENTER	CENTER
2	REAR PRE OUT-MAIN IN	REAR	FRONT	REAR	×	CENTER	CENTER
3	None	×	FRONT	REAR	REAR	CENTER	CENTER

Using a second pre-main (power) amplifier

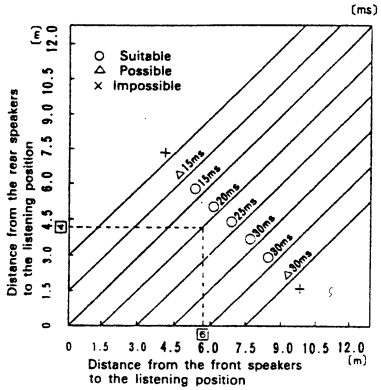


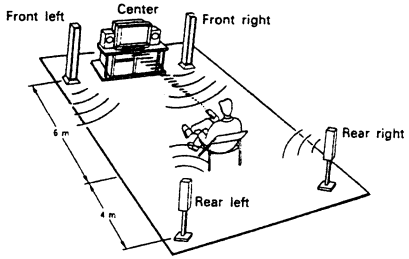
5 DOLBY PRO-LOGIC SURROUND

- **Setting the delay time**
  The optimum delay time will differ depending on the listening position. Referring to the chart at right, set the optimum delay time for your room's space and setting position. For example, when the distance from the front speakers to the listening position is 6 m and that from the rear speakers to the listening position is 4 m, the optimum delay time will be 20 ms.
  The variable range of the delay time differs depending on the mode.
  For details about the variable range, see Page 14.

- **Adjustment of the INPUT BALANCE control**
  The INPUT BALANCE control must be adjusted for proper Pro-logic reproduction.
  1. **Auto Balance Mode**
     When using the Dolby Pro-logic or Spectarea modes, normally set the AUTO BALANCE switch on and this will cause "AUTO BALANCE" to light up on the multi-function display.
  2. **Manual Mode**
     When you would like to adjust the INPUT BALANCE control and not use the auto balance function, adjust as follows:
     ①Set the Dolby Pro-logic surround mode.
     ②Set the center mode to center off.
     ③Play back the speech portion of a film or some other source and adjust the INPUT BALANCE control so that a minimum amount of sound leaks from the front and rear speakers.
     ④This completes the adjustment.
     The center mode can be switched to suit the speaker system.

Listening position and optimum delay time for playback with Dolby Pro-logic surround





The on-off switching of the speaker outputs (speaker A, speaker B, rear, and center), the setting of the delay time, and the volume adjustment of the rear and center speakers can be set for each surround mode.

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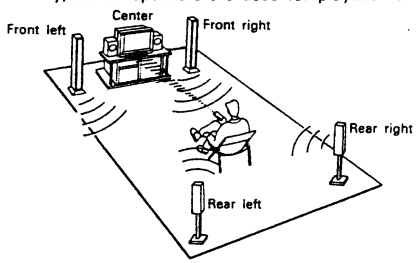
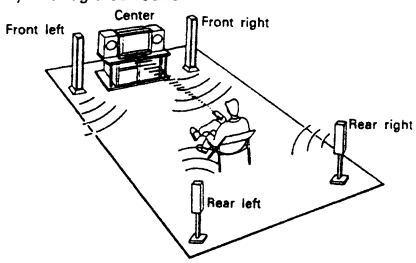
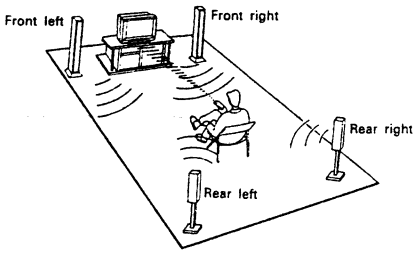
- **Speaker arrangement and Dolby Pro-logic and the center mode**
  Ideally, center speakers are used for playback of Dolby Pro-logic surround.



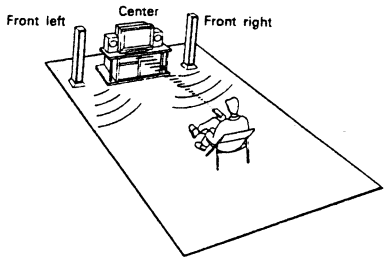
NORMAL mode
Normal mode: This mode is suited for an arrangement in which the center channel speakers are smaller than the left and right speakers. Signals below 100 Hz which have almost no effect on directional orientation are distributed to the left and right channels, whereas the center channel outputs signals greater than 100 Hz. As a result, the bass of the left and right channels increases the apparent deepness of the sound.



WIDE mode
Wide mode: This mode is suited for an arrangement in which the center channel speakers are of the same grade as the left and right speakers. The entire sound band from low region to high is output to the center channel to provide an exciting sound field for your enjoyment.



PHANTOM mode
Phantom mode: Use this mode when center channel speakers are not used. A directional emphasis circuit provides signal reproduction which is electrically oriented to the center and this provides an exciting sound field for your enjoyment.



3-CH LOGIC
Three-channel logic mode: Use this mode when rear channel speakers are not used. The rear channel information is fed to the front speakers to provide the surround effect.

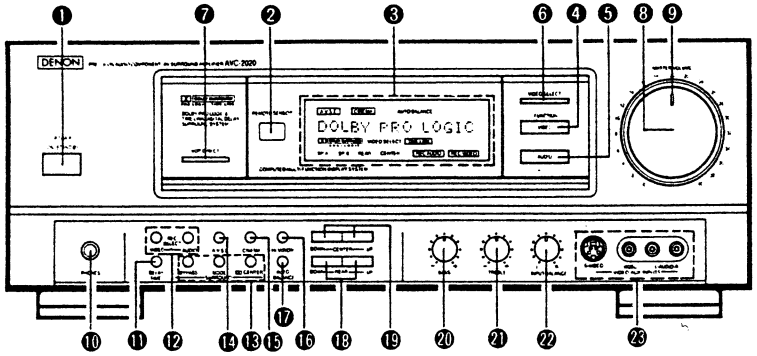
- **Test Tone**
  The test tone function is used to generate a test signal for adjusting the level of each channel in the Dolby Pro-logic surround mode.
  Before using Dolby Pro-logic surround, arrange the speakers as illustrated above and follow the procedure given here. Using the test tone, set the optimum volume balance for each speaker and set the volume and other controls so that each speaker can be heard at the same level.
  In the normal and wide modes the test tone is provided as the speakers are switched in the following order:
  →Front left → Center → Front right → Rear→

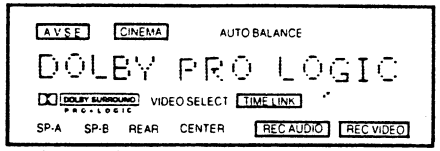
  Use this signal to adjust the volume balance and set an optimum balance.
  In the phantom mode the test tone is provided as the speakers are switched in the following order:
  →Front left → Front left and right → Front right →
  └Rear←
  In the 3-ch logic mode the test tone is provided as the speakers are switched in the following order:
  →Front left → Center → Front right

  Note that this amplifier provides the test tone at 4-second intervals for the first two cycles.
  Use the remote control unit (RC-134) for the adjustment of the test tone.

6 PART NAMES AND FUNCTIONS

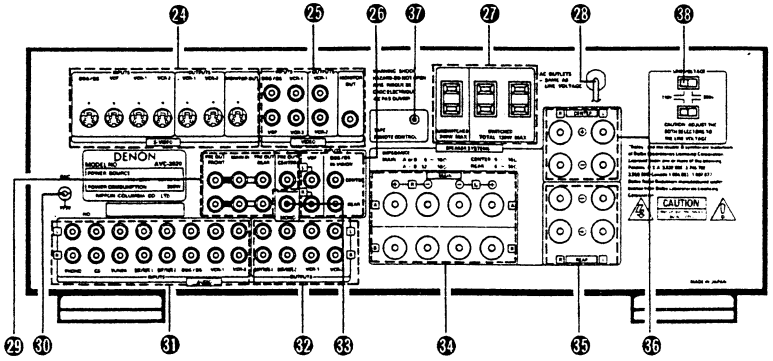
Front panel





❹ Multi-function display
Maximum display of 16 characters.
(See pages 19~23)

Rear panel



❶ POWER switch

• ON

Pressing this button once will switch on the power and the MASTER VOLUME LED ❾ will flash on and off (during which time the muting circuit operates to prevent the noise which would otherwise occur when the power switch is at "ON-STANDBY"). Several seconds after the power is switched on the LED will change from a flashing to a steadily lit state, the operation of the muting circuit is cancelled, and the amplifier enters the regular operating condition.

• STANDBY

Pressing the button once again will switch off the power and introduce the standby mode in which the LED of MASTER VOLUME ❾ will be lit.

❷ REMOTE SENSOR

This is the sensor of the wireless remote control unit.
Point the wireless remote control unit (R-134) at this sensor when operating it.

❸ Multi-function display

When the power is switched on, the multi-function display shows the surround mode and input/output information.
Normally, one of the surround mode displays is shown. When another button is pressed, the display corresponding to that button appears for about 5 seconds. After this, the display returns to the surround mode display.
For details on the multi-function display, see Pages 19 to 23.

❹ VIDEO FUNCTION selector
(Video input selection button)

This button switches the input positions which have video input signals.
Pressing this button repeatedly or holding it down will change the input positions in the following order:

→DBS/BS → VDP → VCR-1 → VCR-2 →
V. AUX ←

❺ AUDIO FUNCTION selector
(Audio input selection button)

This button switches the audio input positions.
Pressing this button repeatedly or holding it down will change the input positions in the following order:

→PHONO → CD → TUNER → DAT/TAPE-1 →
DAT/TAPE-2 ←

❻ VIDEO SELECT
(Independent switching button for the video signal)

This button is used to switch the video signals independently of the audio signals.
Holding this button down will cause the video input signals to be switched in the order shown below. When the desired video input signal is displayed on the multi-function display, remove your finger from the button. Now, even if the AUDIO FUNCTION selector ❺ is switched, the video signal will not change.
To cancel this condition, press the VIDEO SELECT button again or press the VIDEO FUNCTION selector ❹.

→DBS/BS → VDP → VCR-1 → VCR-2 →
V. AUX ←

❼ VDP DIRECT button

This button is used to provide higher picture quality and higher sound quality of the video and audio signals which are input from equipment connected to the VDP jacks on the rear panel.
Pressing this button switches the amplifier as described below.

- **VDP direct standby**
  This is the standby period until the amplifier enters the VDP direct mode. Holding the button VDP DIRECT button down for about 3 seconds in this state will set the VDP direct mode. Releasing the button part way through will result in a return to the previous state.
- **VDP direct: V (VDP video direct)**
  Holding the button down in the VDP direct standby mode will cause the video signal to bypass the on-screen circuit and other circuits to be output directly to the monitor output. This provides higher quality video reproduction.
  * In this condition, video signal output for recording is automatically cancelled so that recording will not be possible by VTR, etc. The on-screen function will also be inoperative so that on-screen checks of the operating condition will not be possible.
    Note that in this condition AUDIO REC SELECT (independent recording of the audio) is cancelled automatically and the signals from the equipment currently selected by the AUDIO FUNCTION selector ❺ or the VIDEO FUNCTION selector ❹ are output to DAT/TAPE-1, DAT/TAPE-2, VCR-1, and VCR-2.

- **VDP direct: V & A**
  (VDP video and audio direct)
  Pressing the VDP DIRECT button once more in the VDP video direct state will, in addition to the video signals, also bypass the audio signals from circuits which include the surround circuits and tone control circuits and output the signals to the front outputs to provide higher quality audio reproduction.
  * In this condition, audio signal output for recording is automatically cancelled so that recording will not be possible by tape deck, etc. The surround mode will also be cancelled automatically and only direct playback from the front speakers will be possible.
- **Cancellation of the VDP direct mode**
  The VDP direct mode can be cancelled by pressing the VDP DIRECT button one more time in the VDP video and audio direct states or by pressing VIDEO FUNCTION ❹ or AUDIO FUNCTION ❺

Selecting the VDP direct mode automatically cancels REC OUT SELECT (independent video and audio recording). Also, this mode is automatically cancelled when the power is switched off.

❽ **MASTER VOLUME control**
Turn the knob clockwise to raise the volume and turn it counterclockwise to lower it.

❾ **Master volume LED**
This LED flashes during regular operation and during the muting condition. It is lit steadily during the standby condition.

❿ **PHONES jack**
This jack is used for headphone connections. When you do not wish output from the speakers, switch off the output with the remote control unit or switch off the output of the component connected to PRE OUT.

⓫ **DELAY TIME button**
Press this button to select the delay time. Pressing this button will switch the delay time settings through the range of 0 to 130 ms in 0.5 ms steps and from 30 to 130 ms in 2.0 ms steps.
- **For DOLBY PRO-LOGIC in the surround mode:**

20 ms → 30 ms → 15 ms

- **For other surround modes (with the exception of LIVE):**

20 ms → 130 ms → 0 ms

⓬ **REC SELECT**
(Independent switching buttons for audio and video recording outputs)
These buttons provide a selection of the audio recording and video recording modes which is independent of the selection of the FUNCTION selector.
- **AUDIO button:**
  This button selects a signal output to the recording output jacks of DAT/TAPE 1 and 2, as well as VCR-1 and 2.
  With regard to the recording output, the signal input normally selected by the FUNCTION selector is output to the recording output side. Use of this button, however, permits selection of a signal from input jacks other than the FUNCTION selector jacks.
- **VIDEO button**
  This button selects a signal output to the recording output jacks of VCR-1 and 2. With regard to the video (audio) recording output, normally the video (audio) signal selected by the VIDEO FUNCTION selector ❹ is output. Use of this button, however, permits selection of an input signal other than from the VIDEO FUNCTION selector.

⓭ **SURROUND buttons**
Pressing this button selects the surround mode.
- **BYPASS button**
  Pressing this button will bypass the surround mode to provide regular stereo playback.
  Rear output will not be provided.
- **MODE button**
  Pressing this button switches the surround mode in the following order:
  Priority order

①DOLBY PRO-LOGIC
↓
②SPECTAREA
↓
③HALL
↓
④SIMULATED
↓
⑤LIVE
↓
⑥SYNTHETIC

①DOLBY PRO-LOGIC (surround)
Use this setting when playing back video software recorded in Dolby surround.
Switch the CENTER MODE to suit the speaker system in use.
The delay time may be switched in the range of 15 ms to 30 ms to suit the size of the room and the position of the speakers.

②SPECTAREA
Use this setting when playing back movie video software other than that using Dolby surround.
The delay time may be switched in the range of 0 ms to 130 ms.

③HALL (surround)
Use this setting to create the atmosphere of a concert hall.
The delay time may be switched in the range of 0 ms to 130 ms.
There will be no output from the center speaker position.

④SIMULATED
Use this setting to play back sources recorded in monaural with surround.
There will be no output from the center speaker position.
The delay time may be switched in the range of 0 ms to 130 ms.

⑤LIVE
Use this setting to create the atmosphere of watching a live program in a studio.
The delay time is fixed at 0 ms.

⑥SYNTHETIC
Use this setting to create an atmosphere in which sources recorded in stereo seem to have a further expanded breadth.
The delay time may be switched in the range of 0 ms to 130 ms.

- **CENTER MODE button**
  Press this button when DOLBY PRO-LOGIC has been selected.
  When Dolby Pro-logic surround is used during playback, pressing this button will switch the center mode settings in the following order:

① NORMAL → ② PHANTOM → ③ WIDE
④ CENTER OFF

①NORMAL: Select this setting for playback with Dolby Pro-logic surround. This setting is effective when the center channel speakers are smaller than the left and right speakers.

②PHANTOM: Select this setting for playback with Dolby Pro-logic surround without using the center speakers.

③WIDE: Select this setting when the center channel speakers are of the same grade as the left and right speakers.

④CENTER OFF: Select this setting when the input balance is adjusted manually.

See Pages 12 to 13 for information about speaker arrangement and the input balance adjustment method.

⓮ **A.V.S.E.**
(Bass correction button)
This button is used to emphasize the bass range of the front speakers.
Setting this switch to ON when using movie video software provides even greater impressiveness. Use this function as desired.

⓯ **CINEMA**
(Treble correction button)
This button is used when playing back movie video software and the speech portion is felt to be harsh upon the ears.
This function attenuates the treble range of the center speaker.
The function cannot be used in the Phantom, Hall, Simulated, or Center Off modes.

⓰ **HI-VISION**
(Hi-Vision input switch for use with BS (broadcast satellite) broadcasts)
This function is to be used with future satellite broadcasts. The signals connected to the CENTER and REAR of the DBS/BS HI-VISION jacks on the rear panel do not pass through the surround circuits, but are output directly to the center and rear speakers. Note that this switch is effective only when the FUNCTION is set to DBS/BS.

⓱ **AUTO BALANCE**
(Input balance automatic adjustment button)
This button can be used with the surround mode is set to Dolby Pro-logic or Spectarea. The button automatically corrects the level difference between the left channel and the right channel of the input signal.

⓲ **REAR LEVEL volume buttons**
Use these buttons to adjust the volume of the rear (surround) speakers.
- **UP:** Press to increase the volume.
- **DOWN:** Press to decrease the volume.

The volume will change only while the UP or DOWN button is pressed, and will stop when the button is released. The change in volume is displayed on the multi-function display or the superimposed display.
These buttons cannot be used in the bypass or Dolby Pro-logic (3-ch logic) modes.

⑲ **CENTER LEVEL volume buttons**
- **UP:** Press to increase the volume.
- **DOWN:** Press to decrease the volume.

The volume will change only while the UP or DOWN button is pressed, and will stop when the button is released. The change in volume is displayed on the multi-function display or the superimposed display.
These buttons cannot be used in the following modes: HALL, SIMULATED, PHANTOM mode of DOLBY PRO-LOGIC, and CENTER OFF mode.

⑳ **BASS control**
This control is used to adjust the bass level of the front speaker output or the PRE OUT FRONT jacks.
The bass is increased when the control is turned clockwise (↷) and decreased when turned counterclockwise (↶).

㉑ **TREBLE control**
This control is used to adjust the treble level of the front speaker output or the PRE OUT FRONT jacks.
The treble is increased when the control is turned clockwise (↷) and decreased when turned counterclockwise (↶).

㉒ **INPUT BALANCE control**
This control is used to adjust the left/right input balance to provide effective surround playback.
The INPUT BALANCE control functions as a front output balance in modes other than Dolby Pro-logic and Spectarea.

> See Page 12 for information about the adjustment method.

㉓ **VIDEO AUX INPUTS**
(External video input jacks)
Connect the component's S-output jack to the amplifier's S-VIDEO jack with a connection cord designed for S-jacks.
Connect the component's video output jack to the VIDEO jack with a 75-ohm coaxial cable pin plug cord.
Connect the component's audio output jacks to the AUDIO jacks with pin plug cords.

㉔ **S-VIDEO input/output jacks**

㉕ **VIDEO input/output jacks**

㉖ **INPUTS (audio input jacks)**

㉗ **AC OUTLETS**
See Page 7.

㉘ **AC CORD (power cord)**

㉙ **PRE OUT (FRONT, REAR, and CENTER), and MAIN IN jacks**
See Page 10.

㉚ **GND (ground connection terminal)**
Connect the ground wire of the turntable to this terminal.

㉛ **INPUTS (audio input jacks)**

㉜ **OUTPUTS (audio output jacks)**

㉝ **MONO (monaural output jack)**
This jack is connected to the optional sub-woofer or the TV's monaural audio input jack.

㉞ **MAIN SPEAKERS (main speaker terminals)**

㉟ **REAR SPEAKERS (rear speaker terminals)**

㊱ **CENTER SPEAKERS (center speaker terminals)**

NOTE:

Center speaker terminals
This amplifier is equipped with a center channel output which can accommodate dual center speakers.
Pro-logic surround effects can be obtained with only one speaker wired to the left and right terminals, however, the use of two speakers with similar characteristics wired to both sets of left and right terminals will provide a more effective dual center channel output.

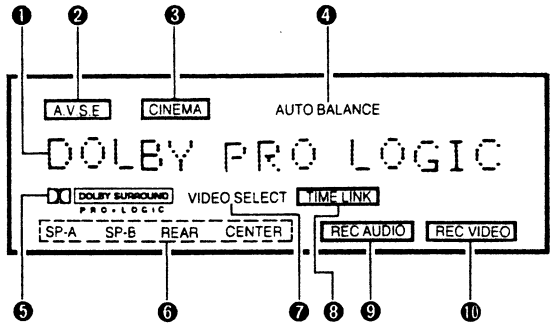
㊲ **TAPE/REMOTE CONTROL**
This terminal is exclusively used for sending the remote control signals to the tape deck. Connect it with a 3.5mm mini-jack cord.

NOTE:

Do not hook up a headphones or microphone jack cord. Use this jack to connect a Denon cassette deck with a remote control jack (wired).
If the cassette deck does not have this jack, wired remote control is not possible.

㊳ **LINE VOLTAGE (Line Voltage) Switch**
Multi Voltage model only.

Description of the Multi-function Display



❶ **MULTIFUNCTION DISPLAY**
This display can show a maximum of 16 characters.
With each press of the remote control panel buttons, the set conditions are displayed in order.
Normally, the currently set surround mode is displayed. Display examples are presented on Pages 20 to 23.

❷ **A.V.S.E. indicator**
Pressing the A.V.S.E. button ⑱ causes this indicator to light up. Pressing the button again switches the indicator off.

❸ **CINEMA indicator**
Pressing the CINEMA button ⑯ causes this indicator to light up. Pressing the button again switches the indicator off.
Note that this indicator will not light up when the surround mode is set to PHANTOM, HALL, SIMULATED, or CENTER OFF.

❹ **AUTO BALANCE indicator**
Pressing the AUTO BALANCE button ⑰ causes this indicator to light up. However, it will only light up when the surround mode is set to DOLBY PRO. LOGIC or SPECTAREA.

❺ **DOLBY SURROUND indicator**
This indicator will light up when the SURROUND mode button ⑬ is pressed and DOLBY PRO. LOGIC is selected.

❻ **OUTPUT CHANNEL indicator**
This indicator shows the channel of the speakers to which the output is currently being sent.

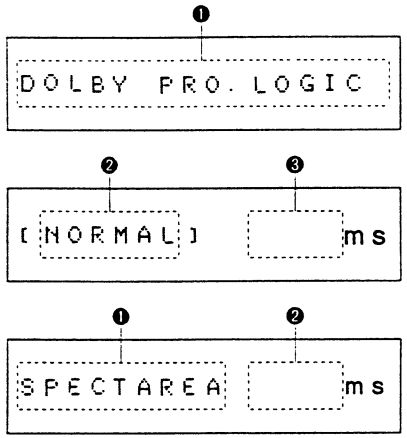
❼ **VIDEO SELECT indicator**
This indicator lights up when the video input signal is selected independently of the audio signal.

❽ **TIME LINK display**
TIME LINK is automatically displayed when the Dolby time link digital delay system operates.

❾ **REC AUDIO indicator**
REC AUDIO is displayed when an audio signal to be recorded is switched independently by the REC OUT SELECTOR.

❿ **REC VIDEO indicator**
REC VIDEO is displayed when a video signal to be recorded is switched independently by the REC OUT SELECTOR.

• **Examples of Multi-function Display Patterns**
The modes shown reflect the states resulting from pressing the buttons on the front panel of the amplifier or by operating the remote control unit (RC-134).



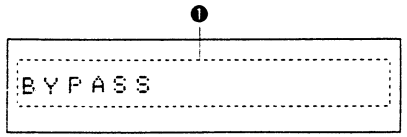
1. SURROUND MODE display

(1) DOLBY PRO. LOGIC

❶ DOLBY PRO. LOGIC, DOLBY 3-CH. LOGIC
❷ NORMAL, PHANTOM, WIDE, CENTER OFF
❸ DELAY TIME
DOLBY PRO. LOGIC settings between 15 ms and 30 ms will be displayed in 0.5 ms steps.
DOLBY 3-CH. LOGIC is not displayed.

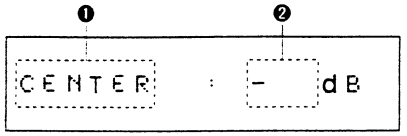
(2) Other SURROUND MODE displays

• These displays will be shown during surround modes such as those listed below.
SPECTAREA, HALL, SIMULATED, SYNTHETIC:
0 ms to 30 ms settings are displayed in 0.5 ms steps and 30 ms to 130 ms settings are displayed in 2.0 ms steps.
LIVE: fixed at 0 ms



(3) BYPASS display

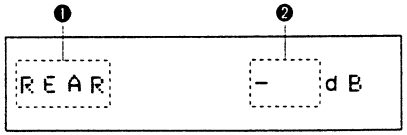
❶ This display is shown in the bypass mode.



2. CENTER LEVEL display

❶ This display is shown when the CENTER LEVEL button is pressed.
❷ The display is in 2 dB steps from –48 dB (minimum) to 0 dB (maximum).

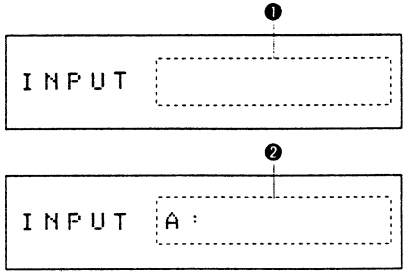
NOTE:
This display is only shown in modes that use the center speakers.



3. REAR LEVEL display

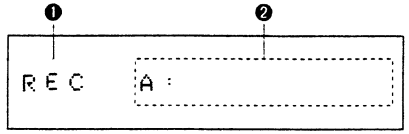
❶ The display will be shown when the REAR LEVEL button is pressed.
❷ The display is in 2 dB steps from –48 dB (minimum) to 0 dB (maximum).

NOTE:
This display is only shown in modes that use the rear speakers.



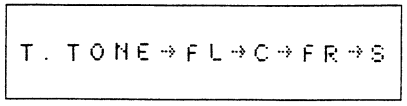
4. INPUT display

❶ Pressing the FUNCTION button (AUDIO or VIDEO) will cause "INPUT" to be displayed after which the function name will be displayed.
When the function name has been preset by system entry, the entry name will be displayed.
❷ When the video signal has already been established with VIDEO SELECT, switching over to AUDIO FUNCTION will result in 3-second displays of the audio input and the video input.



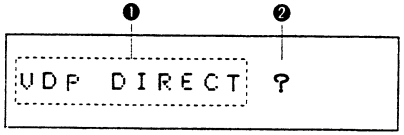
5. REC OUT display

❶ REC SELECT
The display will be shown when AUDIO or VIDEO is pressed.
❷ Audio outputs (A)
The signals selected from among the following will be displayed: PHONO, CD, DAT/TAPE-1, DAT/TAPE-2, DBS/BS, VDP, VCR-1, VCR-2, and V-AUX.
SOURCE is normally displayed.
❸ Video outputs (V)
The signals selected from among the following will be displayed: DBS/BS, VDP, VCR-1, VCR-2, and V-AUX.
SOURCE is normally displayed.



6. TEST TONE display

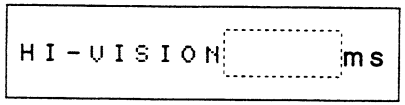
• This display will be shown when the TEST TONE button of the remote control unit is pressed.
The arrow mark will move in conjunction with the output.
This display will continue until the test tone is switched off.



7. VDP DIRECT display

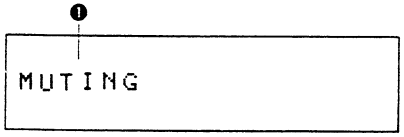
❶ The display will be shown when the VDP DIRECT button is pressed. Holding the button down for 3 seconds or longer will establish the display, and the video direct state will be set. Pressing the button again will also set the audio in the direct state.

❷ The display is shown during VDP DIRECT standby. When established, it will go off, and the VDP DIRECT mode will cause the display to change.



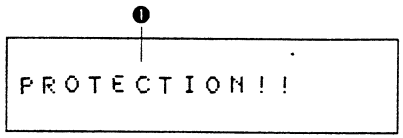
8. HI-VISION display

- When FUNCTION is set to DBS/BS, pressing the HI-VISION button will show the display.



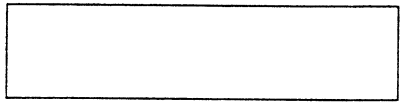
9. MUTING display

❶ This display will be shown when the MUTING button of the included remote control unit is switched on.
The display will continue until the muting is cancelled.



10. PROTECTION display

❶ This display is shown when the protection circuit is activated.
See Page 24 for details.



11. MULTIFUNCTION display off

- Follow this procedure when the multi-function display is not required.
Holding down the "PANEL" button on the remote control will cause the multi-function display to continue to change and go off at the end. When this condition is set and a switch is operated, the associated display is shown and then the display automatically goes off.
To return to the normal display, press the "PANEL" button of the remote control once again.

7 OPERATION

- **Preparations for playback**

1. Checking connections

- Referring to the connection diagrams (Pages 6 to 11) check to make sure that the connections are made properly.
- Check that the left and right speakers are connected properly and also that the polarity (⊕, ⊖) is correct.
- Check that the left and right sides of the pin plug cords are connected properly.
- Check that each cord is securely connected.
- Check that each cord is of the proper type.

2. Checking the positions of the controls
(See Pages 14 to 18 for a reference to the circled numbers.)

- Turn the MASTER VOLUME control fully counterclockwise to the "0" position.
- Set the INPUT BALANCE ㉒, BASS ㉑, and TREBLE ㉑ controls to their center positions.

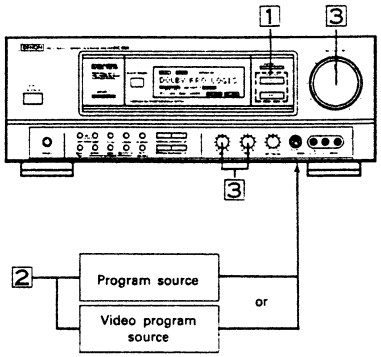
After making the above checks, press POWER switch ❶ to switch on the power.
The amplifier will be operable when the LED of the MASTER VOLUME control stops flashing after several seconds of muting.

Note on playback
The sound will be interrupted if one of the FUNCTION selector buttons ❹ ❺ is pressed during playback. This is due to the operation of the muting circuit which prevents noise from being amplified at the time of switching, and is not a malfunction.

- When using the accompanying remote control unit, press the corresponding button.
For details, see Page 28 of Section 8 REMOTE CONTROL UNIT.

Protection Circuit
This amplifier is provided with a high-speed protection circuit. This circuit protects the internal circuitry from large currents which may be created by the output signals when the speaker terminals are not completely connected or are short-circuited.
The operation of this protection circuit automatically cuts off the output to the speakers and displays "PROTECTION!" on the multi-function display and on the superimposed display. If this should happen be sure to unplug the power cord, check the speaker connections, then plug in the power cord and switch on the power again. If, after another check, the "PROTECTION!" display comes on again, contact your store of purchase.

1. Playback of program sources – 1
(Picture and sound from same source)



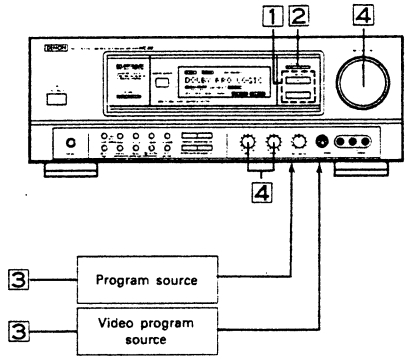
1 Select the desired program source by pressing the AUDIO FUNCTION selector button or the VIDEO FUNCTION selector button.

Program source	AUDIO FUNCTION SELECTOR
To listen to a record	PHONO
To listen to a CD	CD
To listen to FM or AM broadcasts	TUNER
To listen to the DAT or tape deck connected to the DAT/TAPE-1 jacks	DAT/TAPE-1
To listen to the DAT or tape deck connected to the DAT/TAPE-2 jacks	DAT/TAPE-2

Video program source	VIDEO FUNCTION SELECTOR
To watch a satellite broadcast	DBS/BS
To watch the video disc player connected to the VDP jacks	VDP
To watch the video deck connected to the VCR-1 jacks	VCR-1
To watch the video deck connected to the VCR-2 jacks	VCR-2
To watch the video camcorder equipped with playback function or another component connected to the (front panel) VIDEO-AUX jacks	V-AUX

2 Begin playback of the program source.
For operating details, see the manual of the respective component.
3 Adjust the volume and tone.

2. Playback of program sources – 2
(Picture and sound from different sources – "Simulcast" playback)



1 Select the program source you wish to listen to with the AUDIO FUNCTION selector or the VIDEO FUNCTION selector.

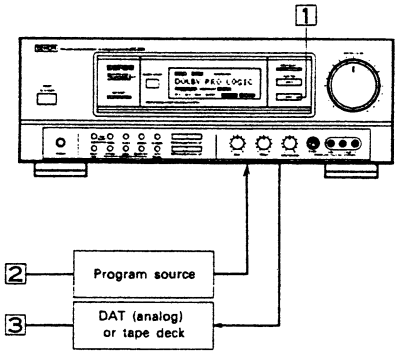
2 Hold down the VIDEO SELECT button for the video program source you wish to watch.

3 Begin playback of the program sources.
For operating details, see the manual of the respective component.

4 Adjust the volume and tone.

* Note that when the VIDEO FUNCTION button is again used to select the video program source during Simulcast playback, the Simulcast playback will be cancelled automatically.

3. Recording program sources and copying tapes (Recording the audio source currently being monitored)



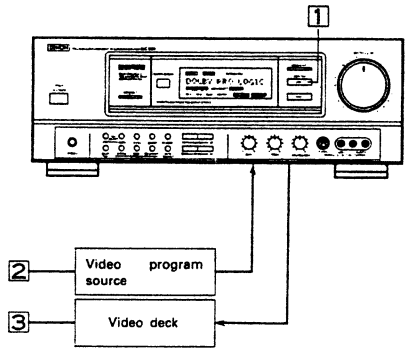
1 Press the AUDIO FUNCTION selector (audio input selection buttons to select the program source you wish to record.

Program source	AUDIO FUNCTION SELECTOR
To record a record	PHONO
To record a CD	CD
To record from the tuner	TUNER
To record from the DAT or tape deck connected to the DAT/TAPE-1 jacks	DAT/TAPE-1
To record from the DAT or tape deck connected to the DAT/TAPE-2 jacks	DAT/TAPE-2

2 Begin playback of the program source you wish to record.

3 Begin recording on the tape deck or DAT (analog).
For operating details, see the manual of the respective component.
For instructions on copying tapes, see Page 27.

4. Recording video program sources and copying videos (Recording the sound and picture of the video source currently being monitored)



1 Press the VIDEO FUNCTION selector to select the program source you wish to record.

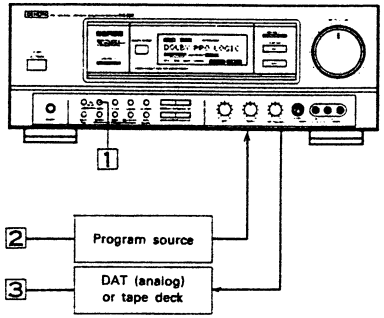
Video program source	VIDEO FUNCTION SELECTOR
To record from the BS tuner connected to the DBS/BS jacks	DBS/BS
To record from the video disc player connected to the VDP jacks	VDP
To record from the video tape deck connected to the VCR-1 jacks	VCR-1
To record from the video tape deck connected to the VCR-2 jacks	VCR-2
To record from the video camcorder equipped with playback function or another component connected to the (front panel) VIDEO-AUX jacks	V-AUX

2 Begin playback of the video program source you wish to record.

3 Begin recording on the video deck.
For operating details, see the manual of the respective component.

- **Simultaneous recording**
  The signals from the sources selected by the FUNCTION selector are output simultaneously from the REC OUT jacks of the audio and video systems. If two tape decks and two Hi-Fi video decks are connected and all four components are set to the recording mode, the four components will record the same source simultaneously.

5. Independent recording of program sources and independent tape copying (Recording the sound of a source other than the one currently being monitored)



1 Hold down the REC SELECT AUDIO button (which independently selects the recording output). Program sources for independent recording will be displayed.
Select the audio program source for independent recording by releasing your finger from the button when the desired source is displayed.
The display will be switched in the following order:
→PHONO → CD → TUNER → DAT/TAPE-1 →
└DAT/TAPE-2 → DBS/BS → VDP → VCR-1 →
└VCR-2 → V. AUX→

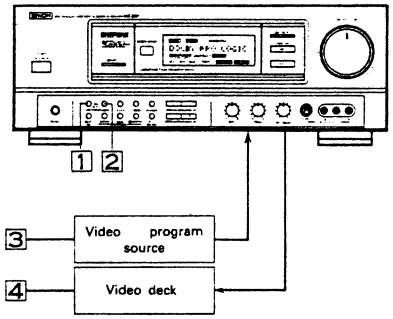
2 Begin playback of the program source to be recorded.

3 Begin recording on the tape deck or DAT (analog). For operating details, see the manuals of the respective components.
* Pressing the REC SELECT AUDIO button again will cancel this mode.

- **Monitoring the recording**
  When making a recording using a 3-head tape deck, the sound that has actually been recorded on the tape can be checked.
  After completing the above settings, use the AUDIO FUNCTION selector to select DAT/TAPE-1 or –2 to which the 3-head deck is connected.

* Note that 5, 6, and 7 cannot be set during the VDP direct mode.

6. Independent recording of video program sources and independent video tape copying-1 (Recording the picture of a source other than the one currently being monitored)



1 Hold down the REC SELECT VIDEO button (which independently selects the recording output). Program sources for independent recording will be displayed.
Select the video program source for independent recording by releasing your finger from the button w hen the desired source is displayed.
The display will be switched in the following order:
→DBS/BS → VDP → VCR-1 → VCR-2 →
└V. AUX

2 Begin playback of the video program source to be recorded.

3 Begin recording on the video deck.
For operating details, see the manuals of the respective components.
* Pressing the REC SELECT VIDEO button again will cancel this mode.

7. Independent recording of video program sources and independent video tape copying-2 (Simulcast recording)

Combining the above procedures, the video and audio programs of different sources can be recorded (Simulcast recording).

1 Hold down the REC SELECT VIDEO button and release your finger when the video program source you wish to record is displayed.

2 Hold down the REC SELECT AUDIO button and release your finger when the video program source you wish to record is displayed.

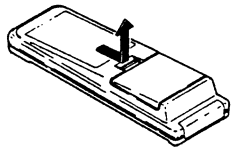
3 Begin playback of the program sources.

4 Begin recording on the video deck.

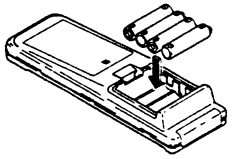
8 REMOTE CONTROL UNIT

Following the procedure outlined below, insert the batteries before using the remote control unit.

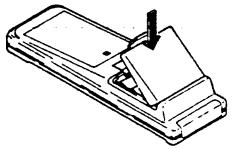
1. Open the bottom cover of the remote control unit and remove the battery cover.



2. Insert the four R6P/AA batteries, matching the ⊕ and ⊖ marks on the batteries with those in the case.



3. Close the bottom cover until it clicks shut.



■ Using the remote control unit

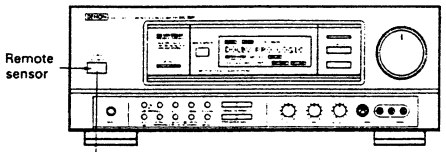
The remote control unit uses highly linear infrared rays. Point it at the amplifier's remote sensor when operating it. The amplifier will not operate if the remote sensor is covered or if there is an obstacle between the remote control unit and the sensor.

Also note that strong light shining on the remote sensor may result in mistaken operations. In addition, using the amplifier near neon signs which generate pulse type noise may result in mistaken operations, so keep the amplifier as far as possible from such neon signs.

■ Cautions for batteries

- Be sure that the ⊕ and ⊖ ends of the batteries match the marks on the battery case of the remote control unit.
- Replace weak batteries as soon as possible.
- Do not mix new batteries with used ones.
- Do not use batteries of different types together. Note that some batteries of the same shape and size may provide different performance.
- Some batteries are rechargeable, others are not. Read the battery instructions carefully.
- Do not connect the ⊕ and ⊖ ends of the batteries directly with metal objects. (Do not short-circuit the batteries.)
- Do not disassemble, heat, or dispose of batteries in a fire. If the batteries should leak, carefully wipe off any fluid from the battery case, then insert new batteries.

■ Range of operation of the remote control unit



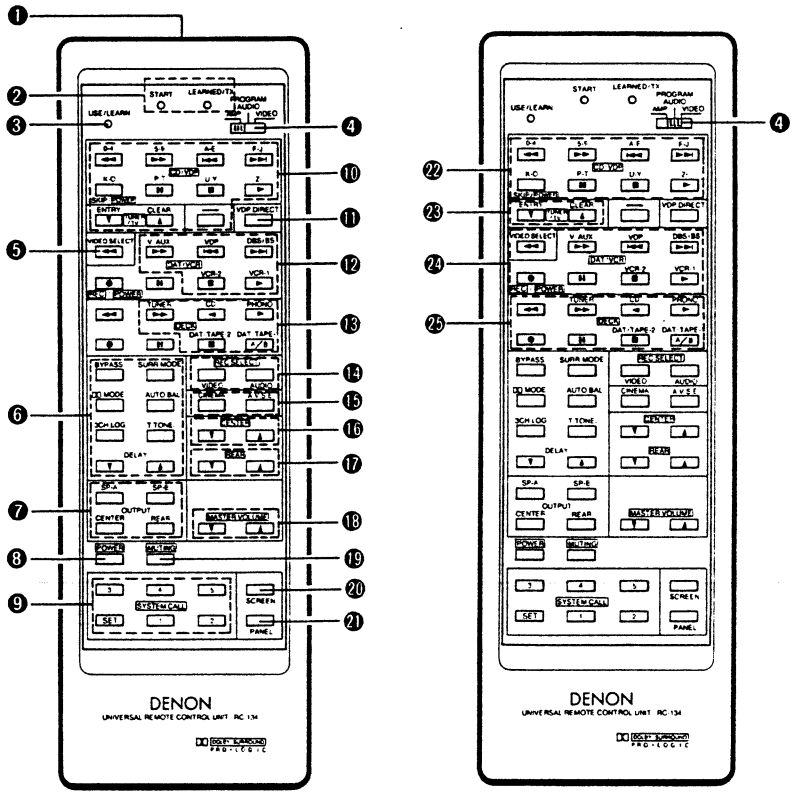
If the range of the remote control seems short or the sensitivity poor, the batteries may be weak. Replace the batteries with new ones promptly.

■ A note on battery replacement

Have replacement batteries on hand so that the old batteries can be replaced as quickly as possible when the time comes.

The codes that have been learned may be lost if removed batteries are not replaced within about 5 minutes.

Part names and functions of the remote control unit



❶ **Transmitting window** The remote control signals (infrared rays) are sent from this window.

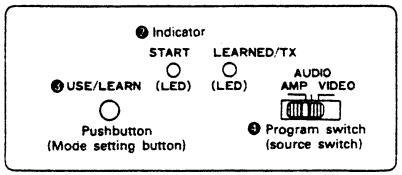
Display plate:

The display plate for the remote control unit is included in the bag containing the Operating Instructions. Use the display plate when using the learning mode and indicate the codes stored at the different keys.

Since the entered characters may rub off, when the display plate is used for a long period of time the characters should be protected with cellophane tape, etc.

A pencil eraser may be used to simply erase the button indications when you wish to change them.

Follow the procedure described below to use the learning function of the remote control unit.



Operation

1. USE/LEARN select button ❸
   Press this button with the tip of a pen, etc. to set the learn mode.
   The START and LEARNED/TX LEDs in the indicator section ❷ will start flashing to indicate that learning is possible.

2. Set the PROGRAM switch to the desired side, PROGRAM AUDIO or VIDEO.

3. Hold the transmitting windows of both your remote control unit and the RC-134 facing each other about 5 cm apart.

4. Press the button of the RC-134 to which you wish to store the code for 1 to 2 seconds, then release it. The LEDs will stop flashing and the START LED will remain lit.

5. Check that the START LED ❷ is lit, then hold down the corresponding button on the other remote control unit.

6. Release the button when the START LED ❷ goes off and the LEARNED LED lights up. The code has now been stored. The two LEDs will once again start flashing.
   Use this procedure to store other codes at other keys.

> **NOTE:**
> - If the code cannot be stored, the LEARNED LED will not light after the START LED has gone off. This may occur for a very limited number of models.
> - If the memory is overloaded, both LEDs will start flashing rapidly after the START LED lights up. If this happens, no more codes can be stored.
>   Use the reset operation to re-learn codes.

7. Repeat steps 4 through 6 above to store codes at other keys.

8. After the learning operations are completed, press the USE/LEARN switch again. The two LEDs will stop flashing and the unit will be in the transmit mode. Check that the stored codes function properly.
   The buttons for which learning is possible are 54 buttons with the PROGRAM switch ❹ set to AUDIO, and 54 buttons with the PROGRAM switch ❹ set to VIDEO, which makes a total of 108 buttons (maximum).

> **NOTE:**
> Depending on the type and length of the codes to be learned, it may not be possible to use all 108 buttons for learning.

Clearing operation

For individual sources

1. Press the USE/LEARN switch ❸ with the tip of a pen, etc., to set the learn mode.

2. Set PROGRAM switch ❹ to the side of the source you wish to clear (either AUDIO or VIDEO).

3. Hold down the [POWER] ❽ and [REAR] ⓱ ▼ buttons at the same time for at least 4 seconds.

4. The START and LEARNED LEDs will light for 2 seconds, then go off when all learned codes for that source are cleared.
   If the source is PROGRAM AUDIO or VIDEO, the remote control unit will be set to the initial codes (DENON system codes).

For all sources

1. Press the USE/LEARN switch ❸ with the tip of a pen, etc., to set the learn mode.

2. The PROGRAM switch ❹ may be set to any one of AMP, AUDIO, or VIDEO.

3. Press the [MUTING] button ⓳ and the [REAR] ▲ button ⓰ at the same time for at least 4 seconds.

4. When the START and LEARNED LEDs alternately light up 6 times, all learning codes will have been cleared.
   Note the initial codes (DENON system codes) will be set.

Remote control operation

1. Check that both LEDs are off.
   If both LEDs are flashing or if the START LED is lit, press the USE/LEARN button to switch them off.
2. When a remote control operation button is pressed, the LEARNED/TX LED will light and the remote control code will be transmitted.

Description of AVC-3020/2020 code buttons

❺ **VIDEO SELECT**
(Independent switching button for the video signal)
(This button has the same function as the corresponding button on the amplifier.)
This button is used to switch the video signals independently of the audio signals.
Holding this button down will cause the video input signals to be switched in the order shown below. When the desired video input signal is displayed on the multi- function display, remove your finger from the button. Now, even if the AUDIO FUNCTION selector ❺ is switched, the video signal will not change.
To cancel this condition, press the VIDEO SELECT button again or press the VIDEO FUNCTION selector ❹.

DBS/BS → VDP → VCR-1 → VCR-2 → V. AUX

❻ **SURROUND buttons**
(Same function as on amplifier; see Pages 16 to 17.)

- BYPASS button
  Pressing this button will bypass the surround mode to provide regular stereo playback.
  Rear output will not be provided.
- SURROUND MODE button
  Pressing this button switches the surround mode in the following order:

DOLBY PRO. LOGIC
↓
SPECTAREA
↓
HALL
↓
SIMULATED
↓
LIVE
↓
SYNTHETIC

The first selection following BYPASS is DOLBY PRO. LOGIC.

- ⊡⊡ Dolby Center MODE button
  This button is only effective when the surround mode is set to DOLBY PRO. LOGIC.
  Pressing this button will switch the Dolby center mode settings in the following order:

NORMAL → PHANTOM → WIDE → CENTER OFF

- TEST TONE button
  This button produces a test signal for adjusting the level of each channel in the Dolby Pro-logic surround mode.
  The test tone is switched as follows:

Front left → Center → Front right → Rear

  This signal is used for adjusting the volume balance.
  For details, see Page 13.
- 3-CH LOGIC button
  This button is used for playing back a video source recorded using Dolby surround without using the rear speakers.
  Switching this button on combines the rear speaker audio with that of the front speakers.
  Pressing the button once more switches this function off and returns the set to normal operation.
- DELAY TIME button
  This button sets the delay time.
  This button is only effective when the surround mode is on.
  Pressing this button switches the delay time between 0 and 30 ms in 0.5 ms steps and between 30 and 130 ms in 2.0 ms steps.
  Pressing the ▲ side increases the delay time.
  Pressing the ▼ side decreases the delay time.
  The following sequence is provided in the Dolby Pro-logic mode:

20ms ⟷ 30ms
(▼▲)
15ms

The following sequence is provided in other surround modes (not including LIVE):

20ms ⟷ 130ms
(▼▲)
0 ms

❼ **OUTPUT buttons**
These buttons switch the speaker outputs on and off. The settings are displayed on the multi-function display and the superimposed display.
- SP-A: Operates the speaker system connected to the front speaker output terminals "A."
- SP-B: Operates the speaker system connected to the front speaker output terminals "B."
- CENTER: Operates the speaker system connected to the center speaker output terminals, and the center pre-out terminals.
- REAR: Operates the speaker system connected to the rear speaker output terminals, and the rear pre-out terminals.

❽ **POWER button** (Same function as on amplifier)
If the amplifier is plugged into an AC outlet this button can be used to switch it to ON and STANDBY.
When pressed, the amplifier becomes operative. Pressing the button again activates the last function memory, which holds the settings for the various components as they were immediately before the standby condition, so that there is no need to perform complicated resettings.
When the power is switched off, the power supply to the SWITCHED AC outlets on the rear panel is also turned off.

❾ **SYSTEM CALL buttons**
See Page 35.

❿ **SYSTEM ENTRY buttons**
See Page 34 to 36.

⓫ **VIDEO SELECT button**
(Same function as on amplifier.)
Holding down the VDP DIRECT button for 3 seconds or longer will set this mode.
Higher grade video and audio will be provided since the video and audio signals output from the equipment connected to the VDP jacks of the rear panel will be output directly.
See Page 15 for details.

⓬ **VIDEO INPUT selection buttons**
These buttons select the input signals of the video components.
These buttons select the input signals and switch the video signals.
- DBS/BS: Press this button to use the BS tuner connected to the DBS/BS jack.
- VDP: Press this button to play back the VDP connected to the VDP jack.
- VCR-1: Press this button to play back the video deck connected to the VCR-1 jack.
- VCR-2: Press this button to play back the video deck connected to the VCR-2 jack.
- V-AUX: Press this button to play back a video camcorder equipped with a playback function, or some other component that is connected to one of the front panel jacks.

⓭ **AUDIO INPUT selection buttons**
These buttons select the input signals of the audio components.
- PHONO: Press this button to play back the turntable connected to the PHONO jacks.
- CD: Press this button to play back the CD player connected to the CD jacks.
- TUNER: Press this button to play back the tuner connected to the TUNER jacks.
- DAT/TAPE-1: Press this button to play back the DAT or tape deck connected to the DAT/TAPE-1 jacks.
- DAT/TAPE-2: Press this button to play back the DAT or tape deck connected to the DAT/TAPE-2 jacks.

⓮ **REC SELECT buttons**
(Independent switching buttons for audio and video recording outputs)
(Same function as on amplifier.)
These buttons provide a selection of the audio recording and video recording modes which is independent of the selection of the FUNCTION SELECTOR.
- AUDIO button:
This button selects a signal output to the recording output jacks of DAT/TAPE 1 and 2, as well as VCR-1 and 2.
With regard to the recording output, the signal input normally selected by the FUNCTION SELECTOR is output to the recording output side. Use of this button, however, permits selection of a signal from input jacks other than the FUNCTION SELECTOR jacks.
- VIDEO button
This button selects a signal output to the recording output jacks of VCR-1 and 2. With regard to the video recording output, normally the video signal selected by the VIDEO FUNCTION selection button ❹ is output. Use of this button, however, permits selection of a signal from input jacks other than the VIDEO FUNCTION SELECTOR jacks.

⓯ **TONE CONTROL buttons**
(Same function as on amplifier.)
- CINEMA (Treble correction button)
This button attenuates the treble range of the center speaker.
The function cannot be used in the Phantom, Hall, Simulated, or Center Off modes.
- A.V.S.E. (Bass correction button)
This button is used to emphasize the bass range of the front speakers.

⓰ **CENTER level control**
These buttons are used to adjust the level of the center output.
Pressing the ▲ side button increases the volume of the center level.
Pressing the ▼ side button decreases the volume of the center level.
These buttons cannot be used in the Phantom, Hall, Simulated, or Center Off modes.

⓱ **REAR level control**
These buttons are used to adjust the level of the rear output.
Pressing the ▲ side button increases the volume of the rear level.
Pressing the ▼ side button decreases the volume of the rear level.
These buttons cannot be used in the Bypass or 3-ch Logic modes.

⓲ **MASTER VOLUME control**
These buttons are used to adjust the master volume level.
Pressing the ▲ side button turns the master volume control of the amplifier clockwise, increasing the overall volume level.
Pressing the ▼ side button turns the master volume control of the amplifier counterclockwise, decreasing the overall volume level.

⓳ **MUTING button**
Pressing this button cuts off the outputs from the PRE OUT jacks and the speakers.
The MASTER VOLUME LED will be flashing during the muting condition. Pressing this button once will set the muting, another press will cancel the muting, the next press sets the muting, and so on.

⓴ **SCREEN button**
Pressing this button provides a superimposed display of the current operating condition on the monitor screen.
Pressing this button will switch the superimposed display.
For details, see Pages 38 to 40.

㉑ **PANEL button**
Pressing this button provides a display of the current operating condition on the multi-function display.
Pressing this button will switch the multi-function display.
For details, see Pages 20 to 23.

• Description of DENON System Code buttons

When the PROGRAM switch ❹ is set to AUDIO, the DENON component system code buttons are set to buttons ⓬ through ⓯, and when set to VIDEO, the code buttons are set to ⓬.

When the PROGRAM switch ❹ is set to AUDIO

⓬ **[CD] player system buttons**
These buttons directly control the DENON remotely-controlled CD players.
The buttons have the same functions as the buttons on the CD player.
▶ PLAY button
Press this button to begin playback.
■ STOP button
Press this button to stop playback.
II PAUSE button
Press this button to pause.
◀◀ (Manual search reverse button)
▶▶ (Manual search forward button)
Press these buttons for manual search in the forward or reverse directions.
I◀◀ (Auto search reverse button)
▶▶I (Auto search forward button)
Press these buttons for auto search in the forward or reverse directions. Use them to find the beginnings of tracks.

When the PROGRAM switch ❹ is set to AUDIO

⓬ **[VDP] system buttons**
These buttons directly control DENON LD players and other remotely-controlled LD players.
The buttons have the same functions as the buttons on the LD player.
Note that some equipment cannot be operated with this remote control unit.
▶ PLAY button
Press this button to begin playback.
■ STOP button
Press this button to stop playback.
◀◀ (Manual search reverse button)
▶▶ (Manual search forward button)
Press these buttons for manual search in the forward or reverse directions.
I◀◀ (Auto search reverse button)
▶▶I (Auto search forward button)
Press these buttons for auto search in the forward or reverse directions. Use them to find the beginnings of tracks.

⓭ **[TUNER] system buttons**
These buttons directly control tuners equipped for remote control.
▲ PRESET channel up button
▼ PRESET channel down button
These buttons change the preset channel.

⓮ **[DAT] system buttons**
These buttons directly control the DENON remotely-controlled DAT.
The buttons have the same functions as the buttons on the DAT.
▶ PLAY button
Press this button to begin playback.
■ STOP button
Press this button to stop playback.
II PAUSE button
Press this button to pause.
◀◀ (Manual search reverse button)
▶▶ (Manual search forward button)
Press these buttons for manual search in the forward or reverse directions.
I◀◀ (Auto search reverse button)
▶▶I (Auto search forward button)
Press these buttons for auto search in the forward or reverse directions. Use them to find the beginnings of tracks.
• REC (record button)
Use this button when recording.

⓯ **[DECK] system buttons**
These buttons directly control DENON cassette decks equipped for remote control.
The buttons have the same functions as the buttons on the cassette deck.
▶ PLAY (REV) button (forward direction)
Press this button to begin playback in the forward direction.
◀ PLAY button (reverse direction)
Press this button to begin playback in the reverse direction.
■ STOP button
Press this button to stop the deck.
II PAUSE button
• REC button
These buttons have the same functions as the buttons on the cassete deck.
SELECT-A/B button
Use this button for selection of the deck when using a double deck.
◀◀ REW button
Press this button to rewind the tape.
▶▶ FF button
Press this button to fast-forward the tape.

⓰ SYSTEM CALL buttons

• Using one button the SYSTEM CALL function permits continuous transmission of the codes of previously learned buttons for up to a maximum of 15 buttons.

SYSTEM CALL registration
1. Press the [SET] button. The START LED of the indicator section will start flashing.
2. Set the PROGRAM ❹ button and then press up to 15 buttons that you would like to set to system call operation in the order that you wish to send them. Each time a button is pressed the LEARNED/TX LED will light. (The maximum number of buttons that can be stored is 15.)
3. Press one button you wish to have stored from among buttons [1] through [5].
4. The START LED will go out and the buttons will have been registered.
5. Up to five buttons ([1] through [5]) can be registered.
   To continue the procedure and register another button, repeat the operations of steps 1 through 4.

NOTE:
The contents of the pressed buttons will also be sent during system call registration and so the transmitting window should be covered or some other precaution taken to avoid unwanted operation of the amplifier.

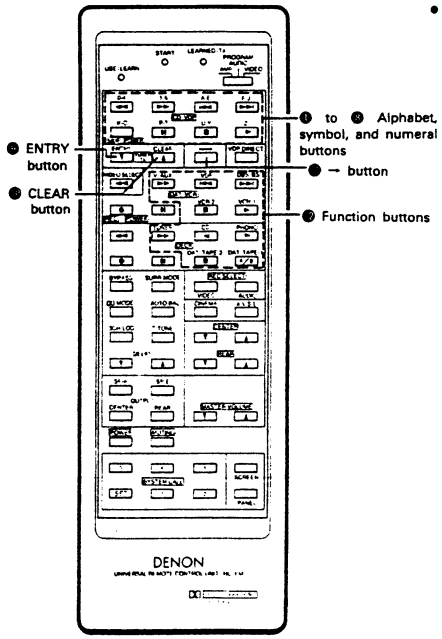
SYSTEM CALL cancellation
1. Press the [SET] button and the START LED will begin flashing.
2. Press the button you wish to cancel among buttons [1] through [5].
3. The START LED will go out and the button will be reset.
4. To continue the procedure and reset another button, repeat the operations of steps 1 through 3.

Using the SYSTEM CALL function
1. Press once one of the [1] through [5] buttons that have been registered for system call use.
2. The LEARNED/TX LED will light. The remote control codes will be sent in the registered order approximately every 1.5 seconds.
3. The LEARNED/TX LED will go out and the transmission will be completed.

⓫ SYSTEM ENTRY buttons

- The system entry function is used in conjunction with the function buttons and permits the names of the equipment used or some other information (up to 8 characters) to be stored and displayed. (Example: CD → DCD-1430, DAT/TAPE-1 → DR-70G, etc.)

Button names



- Description of the remote control buttons used for system entry

❶ 0 – 4	0 → 1 → 2 → 3 → 4
❷ 5 – 9	5 → 6 → 7 → 8 → 9
❸ A – E	A → B → C → D → E
❹ F – J	F → G → H → I → J
❺ K – O	K → L → M → N → O
❻ P – T	P → Q → R → S → T
❼ U – Y	U → V → W → X → Y
❽ Z – ·	Z → – → (Space) → · (Hyphen) (Space) (Period)
❾ ENTRY	Used when starting and completing storage of the system entry.
❿ CLEAR	Used when resetting the system entry.
⓫ →	Input character setting button
⓬ Function	Selects the button to which system entry is set.

NOTE:
When a button input has not been made for about 20 seconds during system entry, the system entry will automatically be completed.

SYSTEM ENTRY (registration)

Figure 1

```
SYSTEM ENTRY
```

Figure 2

```
CD          :CD
```

Preset function name; flashing display; 8 characters

Example: Enter DCD-1530 to CD.
1. Set the PROGRAM switch to AMP.
2. Press the ENTRY key ❾.
   A display such as that shown in Figure 1 will appear on the multi-function display of the amplifier.
3. When the CD button ⓬, to which system entry is desired, is pressed within 10 seconds, the CD and flashing display will appear as shown in Figure 2.
4. To input the letter D, press the A-E button ❸ four times and the D will be displayed. Pressing the → ⓫ will input the D and the flashing space will move to the right.

Figure 3

```
CD          :DCD-1530
```

Figure 4

```
SYSTEM ENTRY END
```

SYSTEM ENTRY CLEAR method

Figure 5

```
CLEAR MEMORY ?
```

Superimposed display

Figure 6

```
** SYSTEM ENTRY 1 **

DBS/BS  →  DBS/BS
VDP     ←  VDP
VCR-1   ←  VCR-1
VCR-2   ←  VCR-2
V. AUX  ←  V. AUX
```

Figure 7

```
** SYSTEM ENTRY 2 **

PHONO  ←  PHONO
CD     ←  CD
TUNER  ←  TUNER
D/T-1  ←  D/TAPE-1
D/T-2  ←  D/TAPE-2
```

5. To input the letter C, press the A-E button ❸ three times and the C will be displayed. Pressing the → ⓫ button will input the C and the flashing space will move to the right.
6. To input the letter D, press the A-E button ❸ four times and the D will be displayed. Pressing the → ⓫ button will input the D and the flashing space will move to the right.
7. Using the same method, enter the remaining characters by pressing the alphabet, symbol, and numeral buttons ❶ through ❽ for the hyphen, 1, 5, 3, and 0. (See Figure 3.)
8. Pressing the function button CD once again will store the contents in the currently registered function CD.
9. Repeat steps 1 through 8 and store the system entry to another function button.
10. Hereafter, the function display will be displayed as the name entered in the system entry.
11. Press the ENTRY button and complete the operation.

- The same procedure is used to change registered contents.

For one function button at a time
1. Press the ENTRY button ❾.
2. Press the function button ⓬ you wish to clear and it will be displayed.
3. Pressing the CLEAR button ❿ will delete the system entry.

For all function buttons
1. Press the ENTRY button ❾.
2. Pressing the CLEAR button ❿ will make the display of Figure 5 appear. Holding the button down for 4 more seconds will delete all of the system entries.

* After the system entries have been cleared, press the ENTRY ❾ button when completing the ENTRY operation.

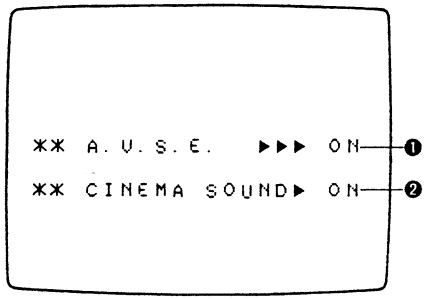
- System entries will be shown on the superimposed display the same as on the multi-function display.
  When selecting DBS/BS through V. AUX of the VIDEO INPUT selector buttons with the function button, the contents of Figure 6 will be displayed. Similarly, when selecting PHONO through DAT/TAPE-2 of the audio INPUT selector buttons with the function button, the contents of Figure 7 will be displayed.

9 SUPERIMPOSING

The operating condition of the amplifier is displayed on the monitor TV when the power is switched on, when the SCREEN button of the remote control unit is pressed, when buttons are pressed, and at other times.
When the power is switched on and the SCREEN button of the remote control unit is pressed, displays such as the following will appear.
With repeated presses of the SCREEN button the display will change in the following order: screen 1 → screen 2 → screen 3 → system entry display → OFF (and a repetition of this sequence).
For details on the system entry display, see Pages 36 to 37.
Note that when the power is switched on, screens 1 and 2 will be displayed for about 6 seconds and then go off automatically.
At the time of normal button operation, only the display pertaining to the pressed button is displayed for about 4 seconds and then goes off automatically.

NOTE:
- Superimposed displays will not be output to S-jack monitor outputs and video signal outputs used for recording.
- For video inputs selected by a VIDEO INPUT selector button, the color background of the video will be cancelled following the completion of the superimposed display.

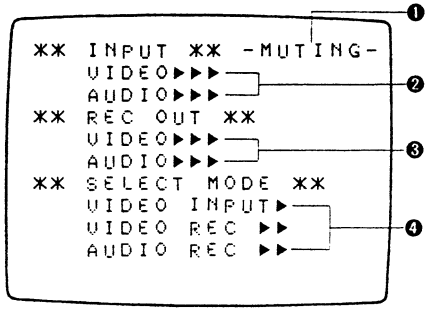
Screen-1 A.V.S.E. and CINEMA displays



❶ **A.V.S.E. display**
Displays the condition of the A.V.S.E. switch.

❷ **CINEMA display**
Displays the condition of the CINEMA switch. Note that this display will only be shown for modes which use the center speakers.

Screen-2 INPUT & REC OUT display



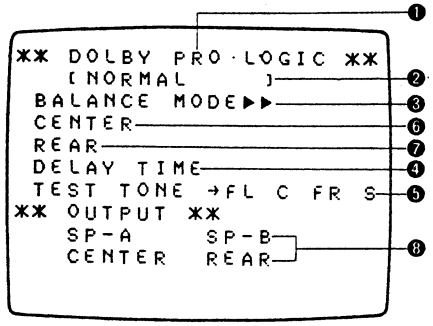
❶ **Muting display**
Flashes when the muting function is on.

❷ **INPUT SELECTOR display**
Displays the amplifier's inputs using abbreviations, etc.
(When processed for system entry, the registered name is displayed.)

❸ **REC OUT SELECTOR display**
Displays the recording output.
(When processed for system entry, the registered name is displayed.)

❹ **SELECT MODE display**
Is displayed when the REC OUT SELECT mode, VIDEO SELECT mode, and other select modes are specified.

Screen-3 SURROUND & OUTPUT display



❶ **SURROUND MODE display**
Displays the surround mode.

❷ **CENTER MODE**
The center mode is displayed only when the surround mode is set to Dolby Pro-logic.

❸ **BALANCE display**
Displays the volume balance as auto or manual.

❹ **DELAY TIME display**
Displays the delay time. There is no display in the BYPASS mode.

❺ **T. TONE display**
A display is provided when the test tone is on.

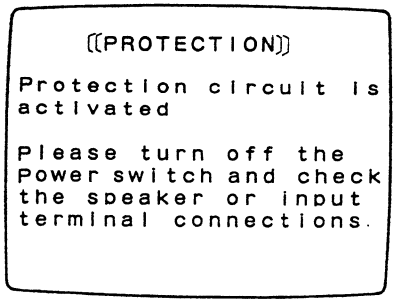
❻ **CENTER LEVEL display**
Displays the center level when a surround mode other than the Dolby Pro-logic Phantom, Hall, or Simulated is selected.
The ■ marks increase as the level is raised.

❼ **REAR LEVEL display**
Displays the rear level as ■ marks. There is no display in the bypass mode or at the time of Dolby 3-ch logic.

❽ **OUTPUT display**
Displays the various outputs when they are on.

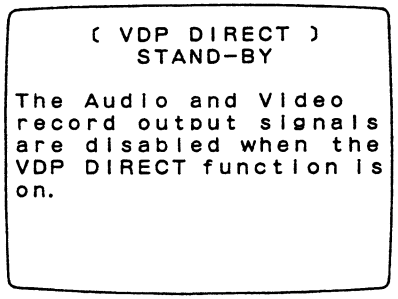
NOTE:
Character screen wavering of the superimposed display
Depending on the video equipment and software, some of the characters of the superimposed display may be unstable due to noise or poorly adjusted tracking of the video equipment. Should this happen, adjust the tracking of the video equipment.

1. PROTECTION display


([PROTECTION])
Protection circuit is activated
Please turn off the Power switch and check the speaker or input terminal connections.

❶ **PROTECTION (circuit) display**
This display appears when the protection circuit is activated.
See Page 24 for details.

2. VDP DIRECT display



❶ **VDP DIRECT display**
Displayed during the standby period until the amplifier enters the VDP direct mode.
Upon entering the VDP direct mode, this display is cancelled and the on-screen functions cease to operate.
See Pages 15 to 16 for details.

10 TROUBLESHOOTING

If a problem should arise, first check the following:
1. Are the connections correct?
2. Have you operated the amplifier according to the Operating Instructions?
3. Are the speakers, turntable, and other components operating properly?
If the amplifier is not operating properly, check the items listed in the table below. Should the problem persist, there may be a malfunction. Disconnect the power immediately and contact your store of purchase.

	Symptom	Cause	Measures	Page
Common problems arising when listening to the CD, records, tapes, and FM broadcasts	LED not lit and sound not produced when power switch set to on.	• Power cord not plugged in securely.	• Check the insertion of the power cord plug.	6~11
	LED lit but sound not produced.	• Speaker cords not securely connected. • OUTPUT button is off.	• Connect securely. • Select SP-A, SP-B, CENTER, or REAR of the remote control's OUTPUT button.	6 29
		• Improper position of the audio input selection button.	• Set to a suitable position.	24~27
		• Volume control set to minimum.	• Turn volume up to suitable level.	14~16
		• MUTING is on.	• Switch off MUTING.	33
	LED continues flashing.	• Speaker terminals are short-circuited. • Incomplete connection of the shorting pin between PRE OUT and MAIN IN.	• Switch power off, connect speakers properly, then switch power back on. • Connect shorting pin properly.	7 11
	Sound produced only from one channel.	• Incomplete connection of speaker cords. • Incomplete connection of input/output cords. • Left/right balance is off.	• Connect securely. • Connect securely. • Adjust balance knob properly.	7 6~11 18
	Positions of instruments reversed during stereo playback.	• Reverse connections of left and right speakers or left and right input/output cords.	• Check left and right connections.	6~11

	Symptom	Cause	Measures	Page
When playing records	Humming noise produced when record is playing.	• Ground wire of turntable not connected properly. • Incomplete PHONO jack connection. • TV or radio transmission antenna nearby.	• Connect securely. • Connect securely. • Contact your store of purchase.	6~7 6~7 –
	Howling noise produced when volume is high.	• Turntable and speaker systems too close together. • Floor is unstable and vibrates easily.	• Separate as much as possible. • Use cushions to absorb speaker vibrations transmitted by floor. If turntable is not equipped with insulators, use audio insulators (commonly available).	– –
	Sound is distorted.	• Stylus pressure too weak. • Dust or dirt on stylus. • Cartridge defective.	• Apply proper stylus pressure. • Check stylus. • Replace cartridge.	– – –
	Volume is weak.	• MC cartridge being used.	• Replace with MM cartridge or use a head amplifier or step-up transformer.	6
Remote control unit	Amplifier does not operate properly when remote control unit is used. (When LEARNED/TX LED is lit)	• Batteries dead. • Remote control unit too far from amplifier. • Obstacle between amplifier and remote control unit. • Learning process to the button improper. • Different button is being pressed.	• Replace with new batteries. • Move closer. • Remove obstacle. • Set learning again. • Press the proper button.	28 28 28 30 30
	Amplifier does not operate properly when remote control unit is used. (When LEARNED/TX LED is not lit)	• Learning process to the button improper. • Learning process has not been applied to the button. • Batteries dead. • ⊕ and ⊖ ends of battery inserted in reverse. • Improper position of PROGRAM switch.	• Set learning again. • Apply learning process. • Replace with new batteries. • Insert batteries properly. • Set to desired position (AMP, AUDIO, or VIDEO).	30 30 28 28 30
	"PROTECTION" display appears on superimposed display and multi-function display.	• Improper speaker cord connection.	• Connect speaker cord properly.	24, 39

11 LAST FUNCTION MEMORY

- This amplifier is equipped with a last function memory which stores the input and output setting conditions as they were immediately before the power is switched off.
  This function eliminates the need to perform complicated resettings when the power is switched on.
- This amplifier is also equipped with a back-up memory. This function provides approximately one day of memory storage with the power cord disconnected.